

CRANFIELD UNIVERSITY

TANJA CONWAY-GRIM

SEARCH AND LOCATION OF BODY DEPOSITION SITES: THE
ROLE OF WINTHROPPING AND OTHER INNOVATIVE
APPROACHES

Cranfield Defence and Security
Forensic Investigation

MASTERS by RESEARCH
Academic Year: 2015 - 2019

Supervisor: Dr Matthew Healy
Associate Supervisor: Peter Masters
February 2019

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ABSTRACT

Homicide is regarded as one of the gravest of all crimes, and those cases where the body is initially missing are more difficult to solve, partly due to a potential loss of forensic evidence. This research investigated the potential role of winthroping (a counter-terrorism search technique developed by the British Army in Northern Ireland), tracking, wayfinding and lowland search and rescue techniques in the search for and location of rural body deposition sites. The focus was on 'no body' murders due to their high impact on society, and the people left behind having to deal with the ambiguous loss of their loved ones.

Appropriate search training with the police, Lowland Rescue and military trackers was undertaken. Search professionals from within the police, military, lowland rescue and search organisations were interviewed. Specific distance data (known as track offset distance) of body deposition sites and locations where missing suicidal males were found, were compared to see whether their search parameters were similar.

Training differences were noted especially relating to navigation and map reading. Most interviewees were familiar with winthroping, but few had applied its principles to the search and location of body deposition sites. 'Fault lines' surfaced as an (unexpected) topic, specifically: communication, financial constraints, statistics, rank and tasking. Homicide was seen as rare and complex, with accurate, intelligence-led tasking being a priority. The use of outside agencies (such as man-trackers and Lowland Rescue) seemed very much dependent upon the police search professional's personal preference and experience, rather than a consistent national evidence-based approach.

Keywords:

Reference point search, informed search, tracking, search and rescue, search techniques, 'no body' homicide, familiarity, feature-focus search, wayfinding

We get trained in ways of seeing things, and then we see in only those ways. We see just what those ways reveal — nothing more, nothing inconsistent. Our world is carved up according to these formulae. Beyond this vision, we see nothing.

(Lawrence Lessig, 2000)

Dedicated to my Mama: Anneke Tammen, died too young of a cruel disease

In memory of Sietse Drentje, murdered long ago, a dear friend & soul mate, long gone, but still remembered, and Anna Campbell, lost in Syria, still to be found

“In every lost soul, the bones of a miracle” Avicii (2015)

LIST OF ABBREVIATIONS & ACRONYMS

ACPO	Association of Chief Police Officers
ACRO	ACPO Criminal Records Office
AIR	ALSAR Incident Recording database
ALSAR	Association of Lowland Search and Rescue – see LR
AMDR	Average Maximum Detection Range (SAR)
ANPR	Autonomic Number Plate Recognition (police)
ATO	Ammunition Technical Officer (military)
BAU	Behavioural Analysis Unit (NCA)
BCRC	British Cave Rescue Council
BCU	Basic Command Unit
BDC	Bomb Data Centre (MPS)
BDS	Body Deposition Site
BOLO	Be on Look Out
BST	Basic Search Technician (SAR)
BTP	British Transport Police
C2	Control & Command (military)
CAA	Civil Aviation Authority
CAFAL	Concealed, Available, Familiar, Accessible, Locatable
CANAL	Concealed, Available, Non-attributable, Accessible, Locatable
CAST	Centre for Applied Science Technology (Home Office)
CATCHEM	Centralised Analytical Team Collating Homicide Expertise and Management (NCA)
CAU	Crime Analysis Unit (NCA)
CBRNE	Chemical Biological Radiological Nuclear Explosive
CC	Chief Constable (Police)
CCCCC	Confirm Clear Cordon Control Check (CT & military)
CIA	Community Impact Assessment (police)
CNI	Critical National Infrastructure
CGOC	Coastguard Operations Centre
CoP	College of Policing
COS	Crime Operational Support (NCA)

CPNI	Centre for Protection of National Infrastructure
CPS	Crown Prosecution Service
CRS	Coastguard Rescue Service
CRS	Community Rescue Service (SAR NI)
CRT	Coastguard Rescue Team
CSI	Crime Scene Investigator (police)
CSM	Crime Scene Manager (police)
CSR	Centre for Search and Research (SAR MR)
CSR	Close Subject Reconnaissance (police & military covert)
CT	Counter Terrorism (police)
CTC	Counter Terrorism Command (police)
CTS	Counter Terrorism Search (police)
CTSA	Counter Terrorism Security Advisor (police)
D&DC	Distress and Diversion Call
DEFRA	Department of Environment, Food & Rural Affairs
DGIFC	Defence Geospatial Intelligence Fusion Centre (military)
DfH	Department of Health
DOA	Dead on Arrival
DfT	Department of Transport
DSTL	Defence Science & Technology Laboratory
DVI	Disaster Victim Identification
EAR	Emergency Air Response
ECHR	European Convention of Human Rights
EOD	Explosives Ordnance Disposal (military)
ESDDT	Explosive Search Detection Dog Team (police)
FA	Forensic Archaeologist
FBI	Federal Bureau of Investigation (USA)
FLO	Family Liaison Officer (police)
FMT	Forensic Management Team (police)
FRS	Fire and Rescue Service
GPD	General Police Dog
GPR	Ground Penetrating Radar
GPS	Global Positioning System

HA	Home Address
HART	Hazardous Area Response Team
HEMS	Helicopter Emergency Medical Services
HES	Hazardous Environment Search
HEST	Hazardous Area Search Team
HI	Homicide Index (Home Office)
HMCG	Her Majesty Coast Guard
HME	Home-Made Explosive
HO	Home Office
HOLMES	Home Office Large Major Enquiry System (police)
HR	High Risk
HSE	Health and Safety Executive
HUMINT	Human Intelligence
ICP	Incident Control Point (police & SAR)
ICS	Incident Command Structure
IED	Improvised Explosive Device
IIMARCH	Information Intention Method Administration Risk Assessment Communication Human Rights (police)
IMINT	Imagery Intelligence
IO	Investigation Officer (police)
IPCC	Independent Police Complaint Commission
IPP	Initial Planning Point (police & SAR)
IRB	Inshore Rescue Boat
IRT	Initial Response Team
ISP	Imagery Support Pack
ISRID	International Search & Rescue Incident Database (SAR)
IVC	Initial Visual Check (police)
JARIC	Joint Air Reconnaissance Intelligence Cell (military)
JESIP	Joint Emergency Services Interoperability Programme
JSEODDOC	Joint Services Explosive Ordnance Disposal Operations Centre (military)
KStat	Lowland rescue incidence reports database, searchable by anyone
LKP	Last Known Point (police & SAR)

LPB	Lost Person Behaviour (SAR)
LPQ	Lost Person Questionnaire (SAR)
LR	Lowland Rescue (this term replaced ALSAR)
LR	Low Risk
LRF	Local Resilience Forum
LSARC	Local Search and Rescue Committee
LSD	Lowland Search Dogs
LSO	Licensed Search Officer (police)
LST	Lowland Search Technician (SAR)
MACA	Military Aid to Civil Authorities
MACC	Military Aid to Civil Community
MACP	Military Aid to Civil Power
MAGD	Military Aid to other Government Department
MCA	Maritime and Coastguard Agency
MIR	Major Incident Room (police)
MIRSAP	Major Incident Room Standard Administration Procedures
Misper	Missing Person aka misper
MIT	Major Incident Team (police)
MO	Modus Operandi – method of operating (by an offender in this context)
MoD	Ministry of Defence
MPB	Missing Persons Bureau (NCA)
MPQ	Missing Person Questionnaire (SAR)
MPS	Metropolitan Police Service
MRCC	Maritime Rescue Coordination Centre
MREW	Mountain Rescue England & Wales
MRSC	Maritime Rescue Sub Centre
MRT	Mountain Rescue Team
MWD	Military working dog
NCA	National Crime Agency
NCIP	National Critical Infrastructure Protection
NHWST	Neighbourhood Watch Search Team
NIRT	Northern Ireland Republican Threat

NNAS	National Navigation Award Scheme
NPAS	National Police Air Service
NPIA	National Police Improvement Agency
NPCC	National Police Chiefs Council
NPT	Neighbourhood Policing Team
NSA	National Search Advisor (NCA)
NSARDA	National Search and Rescue Dogs Association (SAR)
NTM	Notice to Move (for specialist military units, 4 hours to arrive at a scene)
NVG	Night Vision Goggles (military)
OET	Outside Enquiry Team (police)
OIC	Officer in Charge (police)
OSINT	Open Source Intelligence
PDen	Probability density (SAR)
PDH	Police Dog Handler
PiC	Person in Charge (a military term referring to a non-military person in charge)
PIR	Passive Infra-Red
PLAN	Proportionate - Legal – Accountable - Necessary (police)
PLS	Point Last Seen (police & SAR)
PNC	Police National Computer
PNSC	Police National Search Centre
PoA	Probability of Area (SAR)
PoD	Probability of Detection (SAR)
PolKA	Police Knowledge Area (police online learning and peer advice)
PoISA	Police Search Advisor
PoISC	Police Search Coordinator
POS	Probability of Success (SAR)
PPE	Personal Protective Equipment
PSGB	Police Search Governance Board
PSLP	Police Search Learning Programme
PSNI	Police Service Northern Ireland
PSR	Probability of Success Rate (SAR)

PST	Police Search Team
QM	Quarter Master (military and terrorist)
R & P	Route and Path (SAR)
RA	Risk Assessment
RAG	Red Amber Green (police, military, CT & geoforensics)
RCIED	Remote Controlled Improvised Explosive Device
RESA	Royal Engineers Search Advisor (military)
RELIC	Relicensing course for PoISAs
RESC	Royal Engineers Search Coordinator (military)
REST	Royal Engineers Search Team (military)
RNLI	Royal National Lifeboat Institution
RoW	Rest of World
RRP	Regional Resilience Partnerships
RUC	Royal Ulster Constabulary
RVP	Rendez Vous Point (SAR)
RWCSAR	Rescue Water Craft Search and Rescue
SA	Situational Awareness
SAG	Security Advisor Group
SAL	Search and Location
SAR	Search and Rescue (used interchangeably with LR)
SARA	Search and Ropes Access (military team)
SARDA	Search and Rescue Dog Association
SARMan	Search and Rescue Manager (software programme)
SAROG	Search and Rescue Organisations Group
SC	Search coordinator
SCAS	Serious Crime Analysis Section (NCA)
SCD	Serious Crime Directorate
SCENARIO	S pecify item sought - C onfirm last location - E stablish circumstances - N ote factors influencing disappearance - A nalyse possible scenarios - R aise search strategies- I dentify search strategy - O ngoing reassessment (police)
SD	Search Dog
SecCo	Security Coordinator (police)
SES	Specialist Equipment Service

SIO	Senior Investigating Officer (police)
SM/SMT	Search Management Team (SAR)
SMR	Scottish Mountain Rescue
SOC	Specialist Operations Centre (NCA)
SOCA	Serious Organised Crime Agency (predecessor of NCA)
SOCO	Scenes of Crime Officer (police)
SORT	Special Operations Response Team (police)
SOST	Special Operations Search Team (police)
SPST	Service Police Search Team
STL	Search Team Leader (Level 2 LSO) (police)
SVRD	Submerged Victim Recovery Dog (police)
TIE	Trace Interview Eliminate (police)
TL	Team Leader (police, military & SAR)
ToR	Terms of Reference (police)
TSU	Tactical Support Unit (police)
UAV	Unmanned Airborne Vehicle
UKLSI	United Kingdom Lowland Search Institute
UKSAR	United Kingdom Search and Rescue
UKSAROG	United Kingdom Search and Rescue Operators Group
UKSRR	United Kingdom Search and Rescue Region
UKSARSC	UK Search and Rescue Strategic Committee
UNCLOS	United Nations Convention on the Law of the Sea
USAR	Urban Search and Rescue
VOC	Volatile Organic Compounds
VP	Vulnerable Point (military & CT)
VRD	Victim Recovery Dog (police)
WWWWW	Who, What, Where, When, Why

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GLOSSARY/DEFINITIONS

“We say the same thing and mean a hundred different things.”

Police Search Advisor – Metropolitan Police Service

Abandonment	Act of abandoning a body
Advanced Search Advisor	Military term for RE Advanced Search Advisor
Ageing Stations (tracking)	A place where a tracker puts items to see how they age; an apple, bus ticket, broken branch (Kearney, 2009)
AMDR/Visible length (SAR)	Average Maximum Detection Range. A rough estimation how far from a subject you can see the subject (Koester et al, 2004)
Attractant (SAR)	A place or object that may attract a misper; i.e. autistic children are often found in or near water (Koester, 2008)
Auger (police)	Metal rod to probe ground where a body may be buried, allows VRD to scent (Ingram, 2011)
Availability (SAR)	Time and resource at a given location. When SAR personnel get to a call out they must indicate how long they will be able to stay to enable Search Manager/Coordinator to effectively plan the search (Bannerman, 1999)
Basic Search Technician	The minimum standard of training for any ALSAR operational member. (The word Basic is sometimes dropped from the title or substituted with Lowland)
‘Bastard’ search (SAR)	Where the misper is found not to be missing (and unaware of misper status) but located either at home or in the pub having a beer...normally after searchers have spent several hours looking for misper in the pouring rain (Koester, 2008)
Body deposition site	Place where a body is left or concealed (Policing, 2015)
Briefing (police & SAR)	Information regarding misper and tasking will be given out. In SAR: Briefings may be given by a member of the search management team to everyone, or to Team Leaders who would then brief their team members. Many teams are moving towards standardised briefings where you will always be given the same information in the same order (Policing, 2015)

Briefing Map (police)	PolSA or STL will have briefing map to brief STs, IOs and other agencies. Will include the general area of search, search area boundaries, hazards, but also PLS/LKP (Policing, 2015)
Cache	A hidden, but locatable place where weapons or drugs are hidden either short/long term or in transit
Call Out (SAR)	1} The method of informing team members of a 'shout' or search incident. Often by SMS texts 2} May refer to the search incident itself ('Team call out. Information to follow' – often found on SAR Facebook page)
Clandestine burial	Illegal burial of a body
Clue conscious (SAR)	Searchers' state of mind where they'll notice potential clues in the search area, without specifically looking for clues (which would slow down search). Involves noticing items out of place, observing objects mentioned in the briefing, whilst searching at usual spacing and speed for subject/object sought (Bannerman, 1999)
Command Bronze (police)	Operational commander, implementation of tactics; Bronze cordons, Bronze public order, Bronze search
Command Gold (police)	Incident-based commander (SecCo for instance); gives strategic intention
Command Silver (police)	Tactical commander, ensures tactical option to achieve Gold's strategy, ensures operational requirements are met
Concealed deposition	Where an attempt has been made to conceal the body from other people by covering it up with leaves or branches for instance
Contract killing	Contract killing is a form of murder in which one party hires another party to kill a target individual or group of people. It involves an illegal agreement between two or more parties in which one party agrees to kill the target in exchange for some form of payment, monetary or otherwise
Control (SAR)	Area set aside for SM team, usually in specialised and equipped SAR car/van (Young, 2007)
Coverage (SAR)	The mathematical method within Search Theory to calculate the effectiveness of a search prior to calculating the POD. Does NOT describe how much of a sector has been searched

Critical separation (SAR)	Search technique whereby searchers are spaced out so that they would just about see an object at its AMDR/Visible Length (or edge of their vision) (Bannerman, 1999)
Death Investigation Categories	1} Deaths that are expected (disease or natural causes eg old age) 2} Deaths that are sudden, unexpected and unnatural (non-suspicious) 3} Special procedure deaths 4} Homicide or suspicious and unexplained deaths (Cook and Tattersall, 2014)
Debriefing (police and SAR)	1} feedback info regarding the search to TL or SM 2} Evaluation at the end/suspension of search to improve searchers' performance for next call out. 'No blame' approach with constructive criticism (Policing, 2015)
Decision point (military and SAR)	Military term for a location in a landscape where a subject has to make a decision regarding route
Despondent	Person who is missing and believed (based on evidence) to be deliberately missing as a result of clinical depression or intention to self-harm (Koester, 2008)
Efficient search (SAR)	Search planned to maximise chances of finding misper/object quickly. Also known as Critical Separation Search (Bannerman, 1999)
Equivocal death	Questionable death that is open to interpretation (Cook and Tattersall, 2014)
Feature Focus	Another way to describe winthrop search
Feature point	Distinctive point in a landscape
Filicide	Parent killing own child
Grid search	Search method when two or more people perform overlapping separate line searches forming a grid
Ground sign awareness	Military & tracking term for changes or anomalies in the environment (Kearney, 2009)
Hasty search (police and SAR)	The initial response to search; a fast, initial look at high priority routes, paths, tracks and specific areas. Characterised by its speed the hasty search may provide fast finds but also gives immediate reassurance to misper's family that something is being done and provides the SMT with valuable feedback on the search area (Policing, 2015)

Homicide	This term covers infanticide, murder and manslaughter (voluntary and involuntary)
Infanticide	Where a woman: 1} by any wilful act or omission; 2} causes the death of her child being a child under the age of 12 months; 3} but at the time of the act or omission the balance of her mind was disturbed by reason of her not having fully recovered from the effect of giving birth to the child; 4} or by reason of the effect of lactation consequent upon the birth of the child then; 5} notwithstanding that the circumstances were such that, but for this Act, the offence would have amounted to murder she shall be guilty of an offence of infanticide; and may for such an offence be dealt with and punished as if she had been guilty of the offence of the manslaughter of the child."
Initial Planning Point (police & SAR)	Point used to start planning, this may be PLS, LKP or other location (Policing, 2015)
Initial Visual Check (PoISA)	Open doors check of Home Address (Policing, 2015)
Last Known Point (police & SAR)	Hypothesis place based on clues where misper was last thought to be. A hypothesised location based on "clues". His/her car was found in this car park, assuming s/he was driving this is their last known position (Policing, 2015)
Locard's Exchange Principle	The concept that everything leaves a trace and that by entering or exiting an area a person will deposit or remove physical material (Cook and Tattersall, 2014)
Licensed Search Officer (police)	Trained specialist police search officer (Policing, 2015)
Link method search	A search pattern based on 4-way linkage theory, finding associations between the victim, suspect, scene and physical evidence (Lee, Palmbach and Miller, 2001)
Military Aid Civil Power (police)	Specialist military aid to the police, for instance, specialist EOD support (Policing, 2015)
Manslaughter	1} killing with the intent for murder but where a partial defence applies, namely loss of control, diminished responsibility or killing pursuant to a suicide pact

	<p>2} conduct that was grossly negligent given the risk of death, and did kill, is manslaughter ("gross negligence manslaughter")</p> <p>3} conduct taking the form of an unlawful act involving danger of some harm, that resulted in death, is manslaughter ("unlawful and dangerous act manslaughter")</p> <p>The term "involuntary manslaughter" is commonly used to describe manslaughter falling within 2} and 3} while 1} is referred to as "voluntary manslaughter" (CPS definition)</p>
Mariticide	The killing of a husband
Mass murder	Killing of 4+ people in one event, in one or more places, without an emotional cooling off period (Douglas et al 2005, but see footnote on page 9)
Misper	Missing person; the term may be used in conversations with SAR/Police personnel but should not be used when talking with members of the public or relatives of misper (Policing, 2015)
Misper Statistics	There are a number of sources of misper stats – MR, Grampian, ISRID. These give the search management team, team leaders and searchers some initial ideas as to what a “typical” misper of this category does, where and how far they go, and where they are likely to be found etc. They are used to help inform decisions, but it should never be assumed that they show exactly what this individual misper will do (Koester, 2008)
<i>'Missing missing'</i>	A term used to describe a missing person who is not reported missing or not missed (Edkins, 2011)
Murder	<p>Subject to three exceptions (see Voluntary Manslaughter below) the crime of murder is committed, where a person:</p> <p>1} of sound mind and discretion (i.e. sane);</p> <p>2} unlawfully kills (i.e. not self-defence or other justified killing);</p> <p>3} any reasonable creature (human being);</p> <p>4} in being (born alive and breathing through its own lungs) - Rance v Mid-Downs Health Authority (1991) 1 All ER 801 and AG Ref No 3 of 1994 (1997) 3 All ER 936;</p> <p>5} under the Queen's Peace;</p> <p>6} with intent to kill or cause grievous bodily harm (GBH) (CPS definition)</p>

Muster point (SAR)	Area set aside for preparing the kit and awaiting tasking (Young, 2007)
'No body' murder	A homicide where there is (initially) no body (Cook and Tattersall, 2014)
Northumbrian Rain Dance (SAR)	Field technique which provides an easy method of estimating AMDR/Visible Length
Open Door Search (police)	This entails opening all doors and searching all rooms, outhouses, sheds, lofts, cupboards, wardrobes and drawers (Policing, 2015)
Path integration (wayfinding)	Ability to visit several locations and return straight to the original location without retracing one's steps (Epstein and Vass, 2014)
Piloting (wayfinding)	Landmark-based piloting: 1} ID landmarks, 2} utilise landmarks to determine the current position, 3} access long-term knowledge about spatial relationships, 4} plan route to navigational goal (Epstein and Vass, 2014)
Point Last Seen (police & SAR)	Refers to the location of the last confirmed sighting of a misper (Policing, 2015)
Probability of Area (SAR)	An estimate of the likelihood that the subject is in a given area
Probability of Detection (SAR)	An estimate of the likelihood of locating subject/object if it is in the area being searched. Can't be found subjectively (i.e. by asking TL)
Point of find (SAR)	Refers to the actual find of a misper, alive or dead
Police Search Advisor (PolSA)	Police officers specifically trained to advise SIOs on counterterrorism, crime & misper searches (Policing, 2015)
Probability of Success (SAR)	Probability of Success; an estimate of the likelihood of finding the object through all search efforts so far, either in that search sector or overall
Police Search Team (police)	A specialist search team made up of LSOs (Policing, 2015)
Purposeful Wandering (SAR)	Search technique where searchers wander through allocated area searching those areas that may hide a subject/object, i.e. fallen tree, a clump of bushes
Quarter Master	The person in charge of weapons and resources used both in military and paramilitary organisations
Red Amber Green (RAG) (police)	A way of indicating risk in counter-terrorism operations, where red means the highest risk. But also used within geology to indicate areas most suitable for clandestine

	burial. These areas are indicated in green (Policing, 2015)
Reference point	Feature point in a landscape that is used for navigation or recognition of the destination
Rendez Vous point (RVP/RV) (SAR)	The place where team members are asked to go when called out. On arrival, you must sign in immediately (Young, 2007)
Route and Path (R&P) (SAR)	A search of a route, path or track. Part of Hasty Search though can also be the start of Efficient Sector Search. Searchers will quickly move along the R&P searching either side of the track. Whilst traditionally defined as “up to 5 metres either side” modern thinking allows Team Leaders greater flexibility to search potential areas whilst maintaining the pace of the search
Rummage search	Military term for a search done quickly and loosely covering a large area
SCENARIO (police)	SCENARIO stands for: S – Specify item sought C – Confirm the last location E – Establish circumstances of the disappearance N – Note factors influencing discovery A – Analyse possible scenarios R – Raise search strategies I – Identify priority search O – Ongoing reassessment Application of SCENARIO is recorded in search documentation (Policing, 2015)
Search and Locate (police)	Techniques used to find body deposition sites
Search and Rescue	Professional volunteer teams who search for and rescue missing persons (Policing, 2015)
Search documentation (police)	All searches, search policies, maps and search related papers make up search documentation (Policing, 2015)
Searchers’ Map (police)	Search teams are provided with a map with sectors to be searched clearly indicated, to allow for navigation. Any ‘finds’, areas of interest, limitations to search will be marked by search teams and handed back to PolSA after task completed (Policing, 2015)

Sector	An individual segment of a search map, normally allocated along definite boundaries. Sectors will be numbered on a search map (Policing, 2015)
Scenario-based planning	Planning a search around potential scenarios. For instance – the misper may have walked towards town but slipped and become incapacitated. Therefore search tasking – do an R&P towards town (Policing, 2015)
Search Cell (police)	Office during protracted or complex search where search records, maps, plans, policy logs and all documentation is kept (Policing, 2015)
Search kit (SAR)	Search equipment that SAR searcher has in their car or on their person; minimum: torch, notepad, pencil, high visibility jacket, ID card & personal first aid kit. Can be used to refer to all search equipment a searcher has in his/her vehicle or the kit s/he carries on an individual search. This will vary from unit to unit and individual to individual
Search technician (SAR)	Qualified in search and rescue, after extensive training, can refer to a mountain, urban, lowland or dog search technician
Searcher spacing (SAR)	The distance between searchers. At Critical Separation searches, this is 2 x AMDR/Visible Length. TL or SM might require closer spacing to increase POD or in order to safely control the team. May also be increased to allow greater area coverage at lower POD
Searchers' cube (SAR)	Search technique involving looking all around whilst searching: up, down, left, right, forward and backwards. Increases ability to find sought object
Serial killing	Normally defined as a killer who murders three or more people in separate incidents, normally with a 'cooling off' period in between. The FBI defines it as a series of two or more murders, committed as separate events, usually, but not always, by one offender acting alone
Shoulder to shoulder search	Also known as line search. Personnel intensive, destroys forensic evidence (Lee, Palmbach and Miller, 2001)
Situational awareness (military)	Knowledge and understanding of the current situation which promotes timely, relevant and accurate assessment of friendly, enemy, and other operations within the battlespace in order to facilitate decision-making (Stevenson et al, 2013)

Standby (SAR)	A unit or individual's readiness for a call out. PoISA or SC may put SAR unit on standby whilst carrying out initial investigations and IVC. Team members inform SM of availability. During this time team members should inform their team of their availability
Stand down	The end or suspension of a search or search period. A search is only ended when the misper is located. In any other case, the search is suspended
Surface deposition	When a body is deposited on the ground surface, rather than buried in the ground
Sweep Width	Mathematical working within search theory to define the probability of searcher to find an object in a given environment or terrain. It can only be found by experimentation and whilst it is given as a unit of length this does not refer to an actual distance
Team leader (SAR)	Trained to lead a SAR team of 3-4 search technicians during the incident, the link between SM and LSTs, makes decisions based upon the reality of terrain & search sector
Thorough Search	Search that maximises POD; shoulder to shoulder, line search, grid search. Personnel intensive, time-consuming & destroys clues and tracks
Uxoricide	The killing of a wife
Vulnerable missing person	A person at risk due to ill-health, injury, age, or under the influence of a 3rd party. They are classed as either Low, Medium or High Risk (Policing, 2015)
Vulnerable point	Within CT a place most vulnerable to attack (Policing, 2015)
Wayfinding	Consistent use and organisation of definite sensory cues from the external environment (Lynch, 1960)
Waypoint	A waypoint is a reference point in physical space used for navigation
Winthroping	A method of assessing an area, normally outdoors, using reference points in the landscape or environment to determine where something may have been hidden. Developed by British Army in Northern Ireland to locate terrorist arms caches, also used in other areas

1 INTRODUCTION

Please note that in this thesis to avoid confusion homicide victims and long-term suspicious missing people are referred to in *italics* with the year they were reported missing or found murdered *Alice Gross* (2014). References are in Harvard format i.e. Brookman (2005) or (Brookman, 2015). In contrast, ***italics*** indicate perpetrators in the homicide flowcharts (tables 1-3 to 1-5), examples are given using the name of the perpetrators in (with one exemption where the perpetrators are minors and cannot be named), as using the victims' names would create too long a list.

1.1 Thesis layout

This thesis is laid out as follows: Introduction, Critical Literature Review, Methodology, Search, Training, Comparison of Track Offset Distance Data and Training Data, Introspective Reflections of Search Professionals and Homicide Investigators, Discussion, Conclusion and Suggestions for Further Work. At the beginning of each chapter there will be a short introduction to the chapter and at the end of each chapter, there will be a short summary of the chapter. Actual analysis and discussion will be clearly indicated in the appropriate chapters. Where personal communication (from interviews) is used, this is referred to in the following format (PoISA 1). Ethnographic data of the person and year of communication can be found in Appendix E.

1.2 Introduction chapter layout

This is the chapter where the topic for this thesis is introduced and set into context. This research will look at whether search methods such as winthopping, lowland search and rescue techniques and tracking may be applied to the search and location of rural body deposition sites (i.e. in 'no-body' murders, where {initially} the body is missing). This chapter will introduce and define homicide, missing people, and classify different types of homicides in a series of flowcharts.

1.3 Setting the scene

Homicide is regarded as one of the most serious crimes in modern society. In England there are between 550-700 homicide investigations a year, the last year for which figures are available is the year ending March 2018, when 736 homicides were recorded, including the victims of the London and Manchester terrorist attacks (Statistics, 2018). This is not the same as the number of actual homicides, as will be briefly explained on page 3. Homicide is a term that covers murder, infanticide and manslaughter (voluntary and non-voluntary) as described in the Murder Investigation Manual (MIM) (ACPO, 2006). There are many different types of homicide (from assassination to vehicle ramming attack), but in this thesis, the focus will be on 'no body' murders, including sexually motivated murders, serial killings and child murders.

Homicides where there is, initially, no body, i.e. there is reason to believe that a death has occurred but where the body has not yet been located, are extremely distressing for the families involved, resource intensive for the police and subject to intense media and public scrutiny. Historic 'no body' homicide cases include *Keith Bennett* (1964) and *Anne McFall* (1967), *Rena West* (1971), *Genette Tate* (1978), *Vicky Hamilton* (1991) and *Dinah McNicoll* (1991), whilst some more recent cases are *Peter Falconio* (2001), *Linda Razell* (2002), *Claudia Lawrence* (2009), *Suzanne Pilley* (2010), *Tia Sharp* (2012), *April Jones* (2012), *Jayden Parkinson* (2013), *Alice Gross* (2014), *Mariola Cudworth* (2015), *Helen Bailey* (2016), *Kirsty Noden* (2017), *Renata Antczak* (2017), *Alesha McPhail* (2018), *Lucy McHugh* (2018) and *Sam Eastwood* (2018).

This research predominantly focuses on 'no body' murders due to their high impact on both society and the people left behind. Following a homicide, most bodies will be recovered quickly and are normally found in situ. There will have been no or little attempt to hide the body and indeed there is often no intention to hide a body.

The Search and Location (SAL) of Body Deposition Sites (BDS) in homicide investigations is a resource-intensive operation; for example, 700 police officers were involved in the search for missing *Alice Gross* in 2014. Yet locating the BDS

is essential to bring closure to those left behind, who may be suffering from ambiguous loss, in this case, the physical absence with the psychological presence of a loved one, an unclear loss without resolution or closure, as described by Boss and Yeats (2014), Congram (2017) and Boss (2019). It may be essential in order to bring the perpetrator to justice, though this may not always be the case (e.g. *Linda Razell* 2002, *Xiao Mei Guo* and *Bonnie Barrett* 2007).

One of the techniques looked at in this thesis is winthroping. This is a military counter terrorism search technique developed by British military personnel in Northern Ireland during the conflict there. By using reference points in a rural landscape, it was possible to determine where weapons or explosives caches may be located. The method proved to be highly successful and led to an impressive haul as discussed by Wyatt (2019). The method of winthroping was subsequently used on the UK mainland in counter terrorist operations, specialist searches and in the search and location of drugs stashes (PoSAs 1-12). It has also been used in the search and location of body deposition sites (see Hunter and Cox 2005, pp 130-131), but this has not been systematically recorded, analysed or tested.

Though it is, of course, beneficial to look at body deposition sites where a positive identification has been made, it is also important to look at whether search methods from other disciplines may have something to add to the search and location of body deposition sites. When a body deposition site has not (yet) been found it is more likely that the original intention will have been to hide the body and therefore exploring the possibility of interdisciplinary search techniques may be beneficial. Some body deposition sites that have been successfully located were found to have a relevance to winthroping.

There is more to a homicide investigation than searching for and locating a BDS. A 'no body' homicide investigation assumes there is a missing person who is suspected to have come to harm due to third party involvement (Policing, 2015), known as a suspicious missing person. There are also cases where the person was initially recorded as a missing person before the case was re-classified as a murder investigation (*Tia Sharp* 2012, *Jayden Parkinson* 2013, *Alice Gross* 2014,

Alesha MacPhail 2018, Lucy McHugh 2018, Sam Eastwood 2018 and Abdi Ali 2018).

Currently, there are approximately 2000 outstanding long-term Missing Person (misper) cases in the UK, although this figure is likely to be inaccurate due to collection methods (Detective 1). A study in the Netherlands showed that long-term missing persons figures were unreliable due to misreporting, duplication and inaccurate recording, see Leiden and Hardeman (2015) (translation available if required). Newiss estimated that 0.3% of missing persons cases in 1997/1998 within the Metropolitan Police Service (MPS) ended in a fatality (1999, 2004a, 2006, 2011) and NCA-MPB (Detective 1, 2017), although Brookman (2005) suggest that up to 7% of registered long-term missing persons may have died, though not necessarily through homicide and in a report for the charity Missing People (2011) Newiss subsequently put the figure of victims of homicide amongst long term missing people subsequently found dead at 8%.

Within the UK homicide investigations are undertaken by the police or service police and other agencies may be involved such as the National Crime Agency (NCA) and Security Services (MI5). Specialist police forces may be assisting, namely British Transport Police (BTP) & Ministry of Defence Police (MDP). It usually involves multi-disciplinary and multi-agency Subject Matter Experts (SMEs); such as behavioural analysts, geographical profilers, forensic psychologists, forensic archaeologists, forensic geologists or serious injuries specialists, and may include search professionals from the military, private, commercial and voluntary sectors.

Within the constraints of this research, homicide itself will be defined and classified, as this research relates to very specific types of homicides. Two main types of classification (UK & FBI) will be presented. Search techniques utilised by the police, military and other search professionals will be explored and their training compared.

Within the UK the responsibility to investigate deaths falls mainly to the police. For deaths that occur outside a medical setting, there are 4 categories of death investigations (see Table 1-1).

Categories of death investigations	
Category 1	Expected deaths (disease/old age)
Category 2	Non-suspicious sudden, unexpected and unnatural deaths
Category 3	Special procedure deaths
Category 4	Homicide, suspicious and unexplained deaths

Table 1-1 Categories of death investigation (after Cook and Tattersall, 2014)

Category 4 death investigations are further categorised into homicide categories (see Table 1-2). This thesis will focus on category 4 death investigations (see Table 1-1) and homicide categories A+ & B (see Table 1-2).

Not all homicides are prosecuted as such; death by dangerous driving and deaths in custody and during the course of an arrest are not included in the Homicide Index (HI) figures, yet arguably should be (Brookman, 2005). Corporate manslaughter has only been included in the HI since 2008. Homicides are counted as individual cases, not per incident and are counted in the year the offence was recorded, not the year it was committed. Homicides, where the defendant gets acquitted, are not recorded as homicides (Office of National Statistics, 2018).

The HI itself contains the following information: gender of the victim, the age of the victim, the relationship between offender and victim, method of killing, circumstances, location, data on suspects and outcome of court proceedings as well as further information on convicted suspects and comparison of global homicide data (Statistics, 2017). Location data only consists of entries in the following categories: House/dwelling, Street/footpath/alleyway, open outdoor area, licensed premises, other public places or other.

UK Categories of homicide	
Category A+	A homicide where public concern and the associated response to media intervention are such that 'normal' staffing levels are inadequate to keep pace with the investigation.

UK Categories of homicide	
Category A	A homicide which is of grave concern or where vulnerable members of the public are at risk; where the identity of the offender(s) is/are not apparent, or the investigation and the securing of evidence require significant resource allocation.
Category B	A homicide where the identity of the offender(s) is not apparent, the continued risk to the public is low, and the investigation or securing evidence can be achieved within normal resourcing arrangements.
Category C	Homicide, where identity of the offender(s) is apparent from the outset and the investigation and/or securing of the evidence, can be easily achieved.

Table 1-2 Official categories of homicide (after Cook and Tattersall, 2014)

In the United States of America, the Federal Bureau of Investigation (FBI) uses classifications to differentiate between types of homicide (Douglas et al, 2006). These classifications are more detailed than the above UK categories and will normally involve a number of victims, locations, events, victimology, offenderology, *Modus Operandi* (MO), and motive. The FBI also employs a numerical system of classifying murder motives to make categorisation easier see Douglas et al for a detailed explanation and examples (2006).

Below are some flow charts (figures 1-1, 1-2 and 1-3) created from the FBI classification guides, with UK examples of each classification type to illustrate the different types of homicide. These clearly show the difference between the different types of homicide, especially in regard to a number of events and locations. This is something which often is mixed up in the popular press, who often confuse spree, mass and serial killings in their headlines and articles, which can lead to some confusion. UK homicide cases are given as examples for each type of homicide, some of which have been well-publicised cases.

Figure 1-1 Homicide flowchart 1 & 2 bodies

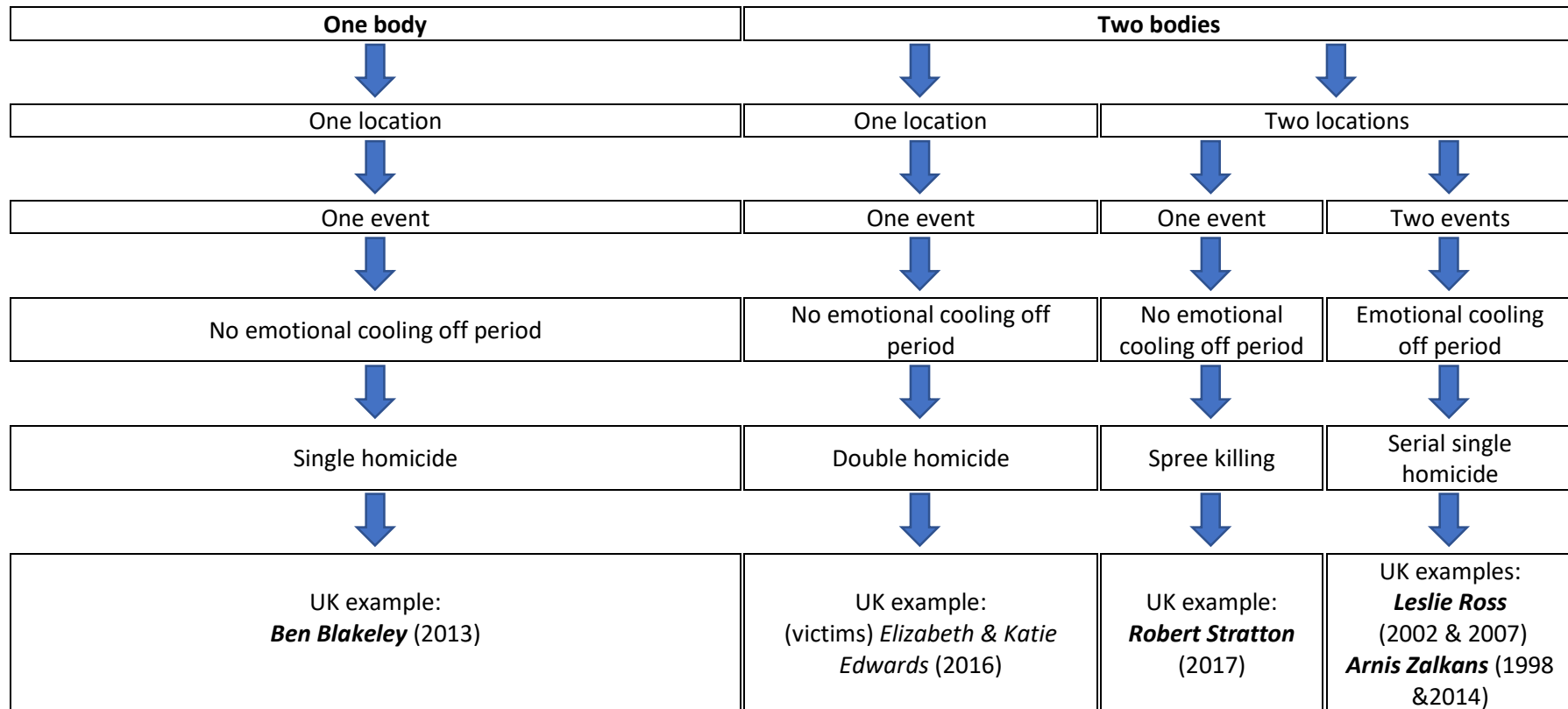


Figure 1-2 Homicide flowchart 3 bodies

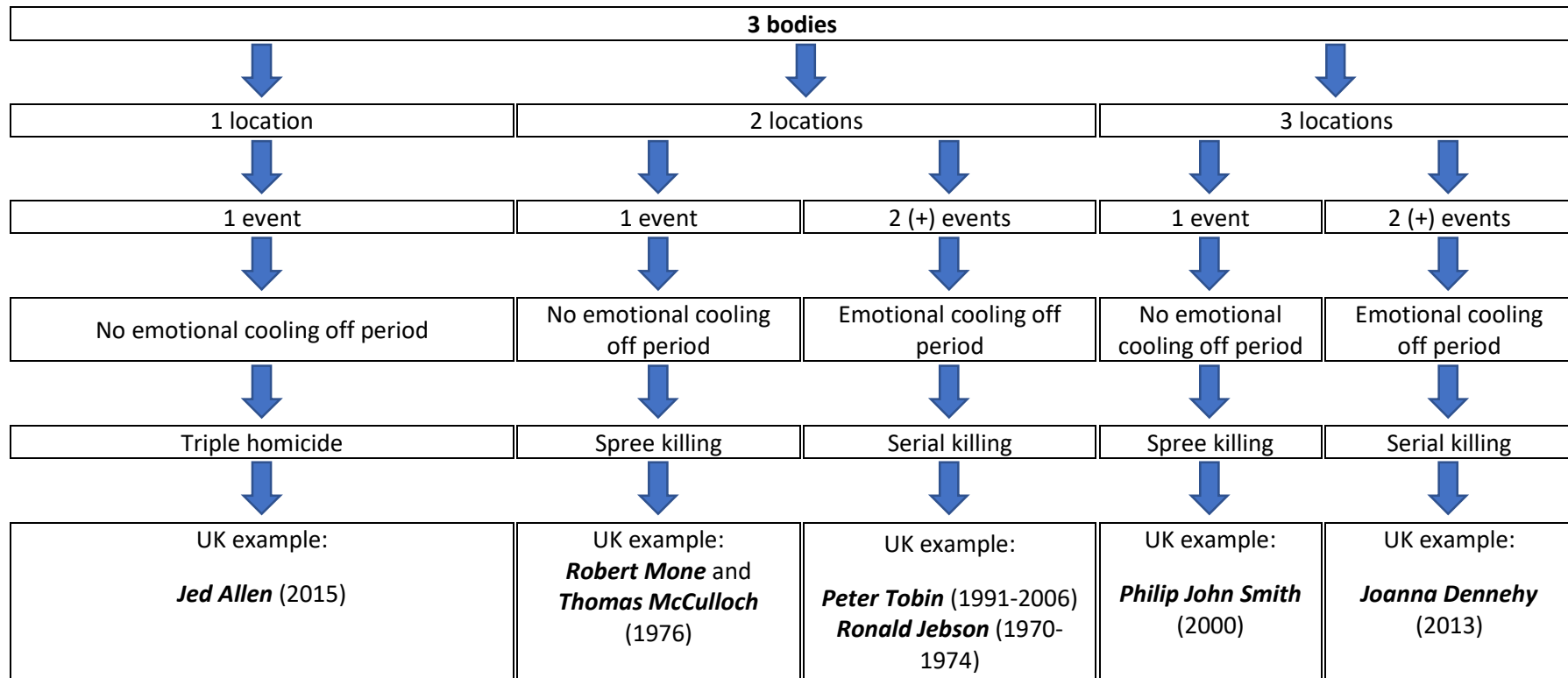
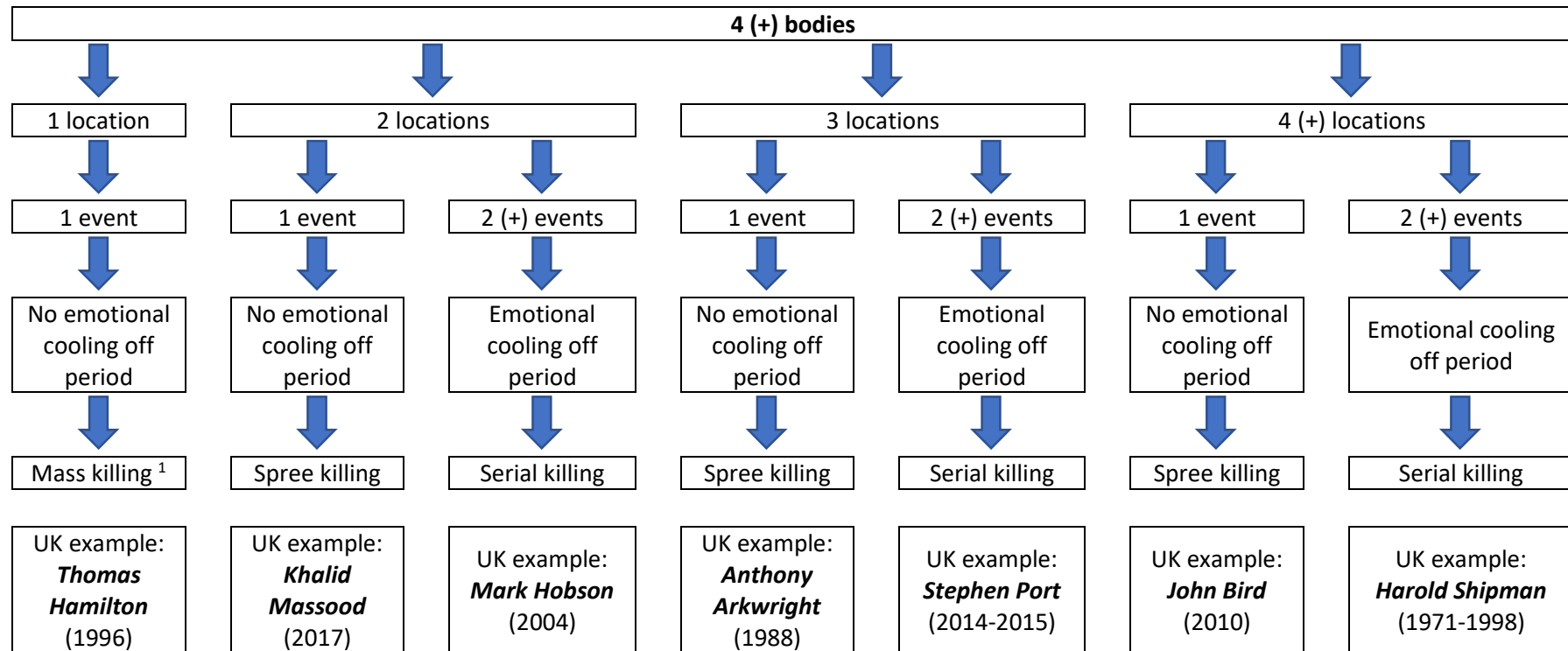


Figure 1-3 Homicide flowchart 4 or more bodies



This research will not include the following FBI classifications: mass murder and spree killing.

¹ The definition given by Douglas et al (2006) is used here. For a more comprehensive overview of the many definitions of mass murder or mass killing see Aggrawal (2005).

1.4 Research questions

This thesis will examine whether the use of winthroping (a military search technique first developed in Northern Ireland) and other approaches from the field of search and rescue (SAR), from the military, such as tracking, and from architecture, such as wayfinding, may be useful in the search and location of body deposition sites. Preliminary previous research (Humphrey, 2010; Forrest, 2013; Buxton, 2017) suggests there may be a role for winthroping, now often referred to as reference point or feature focus search, to reduce the search areas for body deposition sites (see also Donnelly and Harrison, 2017).

Can winthroping (reference point search), tracking, lowland search techniques and wayfinding play a role in the search and location of body deposition sites by reducing the search areas and highlighting the most likely places where a body may be hidden?

This thesis will look at whether there is any evidence for this approach and whether other specific search techniques, such as SAR approaches to search, tracking and wayfinding, can be utilised as well, to reduce the areas that need to be searched and for this search to be more effective and efficient. The focus will be on search techniques, search approaches, search training and in-depth interviews with search professionals and homicide investigators about homicide, search and search approaches.

The next chapter will cover the critical literature review. This is followed by the methodology chapter, a chapter on search in the UK, a chapter on training in search techniques, a chapter on quantitative data for distances and training and a chapter based on qualitative data gathered from in-depth interviews with search practitioners. Finally, there will be a discussion chapter and a conclusion.

2 CRITICAL LITERATURE REVIEW

2.1 Approach

Winthroping is a counter-terrorism search technique to locate hidden arms caches, which was developed in Northern Ireland by Lt Winthrop. An initial literature search review was based on academic internet searches of relevant academic databases such as ScienceDirect, Web of Science etc. Winthroping was used as a keyword and brings up few results. This initial literature search revealed a limited amount of available relevant published materials on this topic, thereby justifying further research (Jesson and Lacey, 2006). Furthermore, any literature which mentioned winthroping was just making a passing reference to the subject, not examining the topic of winthroping and its uses itself (for example see Sturdy Colls, 2015). This indicated the need for an overview of the technique of winthroping itself to establish whether its key components were transferrable to the field of homicide investigations and in particular to the search and location of rural body deposition sites.

A critical literature review was decided upon as this research intended to provide a critical summary or narrative overview (Jesson and Lacey, 2006) on the topic of winthroping. Taking into consideration that there was not enough primary resource material available to conduct a systematic critical literature review, nor to enable meta-analysis and given the time frame of the research, a critical literature review was the appropriate choice (Kysh, 2013). This was conducted by reading around the subject in the fields of lowland search, police and military search techniques, forensic and archaeological search approaches and related fields. Key journals, authors and books were identified. By using NVivo (Garcia, 2015a) it was possible to code all relevant material into nodes (groups), which would subsequently enable qualitative analysis of this data. Key academic theories on winthroping and search were identified, as well as the current opinions of the key writers on the topics. The strengths and weaknesses of previous work were discussed. Every text on winthroping identified in the databases was included in the review.

2.1.1 Limitations

An internet search on the subject of winthroping will demonstrate the immediate problem as not many references come up (see 2.5.1). Winthroping techniques are sensitive and have been classified since the development of the technique. Currently, it is partly declassified although much remains inaccessible to anyone without the appropriate security clearance levels.

By reading around the subject and focussing upon forensic archaeological search techniques, lowland, police and military search techniques relevant literature such as books, journals and articles were identified and utilised.

2.2 Introduction to the critical literature review

For the purposes of this research this review concentrated on just three aspects of search approaches and techniques which may be used in the search and location of body deposition sites: namely *winthroping* (also known as reference point search or feature focus search), *lowland search and rescue search techniques* and *tracking*. There will also be a short exploration of *wayfinding* for reasons that will become clear. Other areas of search approaches such as UAV, GPR and canine will not be discussed in this thesis.

Initial literature searches for winthroping on academic databases such as Scopus, Wiley, Sage and Web of Science brought up few results (see table 2-2). Most of these results just mentioned winthroping in passing without description nor examination of the topic. There were military records and articles on winthroping, but these were classified and thus not available for this research. Lowland search and rescue, tracking and wayfinding had several textbooks and articles available by experts in the field. These were all examined for this review.

2.3 The concept of missing people

"We are one of a kind - irreplaceable" Avicii (2015)

Brookman (2005), Edkins (2011) and Congram (2016) argue convincingly that a person may be missing without anyone else knowing they are missing. Edkins cites examples such as runaways, illegal immigrants, unregistered children,

people displaced by conflict, homeless people and people who have simply ‘fallen off the radar’ and lost all contact with relatives and friends. These people are known as the ‘*missing missing*’ (Edkins, 2011). See table 2-1 for an overview of some known and unknown factors in homicide investigations relating to victim, perpetrator and location.

Known victim: <i>Alice Gross</i> Known perpetrator: Arnis Zalkans Known BDS: Hanwell London	Known victim: <i>Valerie Graves</i> Unknown perpetrator Known BDS: Bosham	Known victim: <i>Keith Bennett</i> Known perpetrator: Ian Brady Unknown BDS location
Missing victim: <i>Suzy Lamplugh</i> Suspected perpetrator: John Cannan Unknown BDS location	Unknown victim: ‘ <i>Angel of the Meadow</i> ’ unidentified female Unknown perpetrator Known BDS: Manchester	‘ <i>Missing missing</i> ’ victim Unknown perpetrator Unknown BDS location

Table 2-1 Known & unknown factors in UK homicide investigation - after Johari Window

Brookman (2005) points out that at least 3 victims of the serial killers Fred & Rosemary West were listed as missing by the National Missing Persons Helpline (NMPH). Alder and Polk (2001) refer to the ‘dark figure of crime’ to describe that same concept of ‘*missing missing*’. And Canter (2007) calls it the ‘black hole’ and describes how several serial killers both in the UK and USA targeted these ‘missing missing people’, a point also raised by Malocco (2015) who suggests that committing the ‘*perfect murder*’ would most likely mean targeting a person who will not be missed. However, Glaus (2014) argues that a person can only be missing if someone other than that person defines them as missing. Furthermore, Quinet (2007) discusses this issue and describes the huge variance in the number of estimated missing missing homicide victims in the United States and suggests this variance may be due to factors such as pressure from feminist and religious groups and the FBI. Quinet estimates the figure of missing missing murder victims in the USA to be between 182 – 1832 per annum. Thus, the concept of ‘missing’ encompasses more than one sphere.

In his documentary about the Spanish Civil War ‘Digging up the Dead’ Michael Portillo (2009) discusses the ‘graves of oblivion’ or ‘graves of forgetting’; graves

of the Republican victims of mass killings by the military regime, and the need of the survivors/escapees of the mass executions to mark their graves with heavy stones to prevent wild animals from digging up the bodies, thus inadvertently creating reference points. These are now being used to locate some of the graves of those missing.

2.4 Search and location of body deposition sites

The search and location of body deposition sites, including clandestine graves, has been written about extensively within the field of forensic archaeology and geoforensics. Skinner and Lazenby (1983) remark upon the importance of written observations of the search area and the importance of correct documentation. Hunter and Cox (2005) describe how winthroping helped to locate a body deposition site, and also point out that burial is not a random phenomenon, but one that relies on fixed reference points, either to facilitate future recognition by the offender or to aid entry and exit from the BDS. Pringle et al (2012) discuss the various geoscience methods in their article, although the emphasis is on more technical approaches, rather than more low technological approaches.

Killam (2004) suggests that when selecting a search area prior to a search operation for a body deposition site, it is important to understand that an offender is restricted by both physical (fitness of offender and weight of victim) and cultural considerations (such as the fear of discovery and hence the need for concealment). Becker (1968) first discussed rational choice theory in relation to economics and pointed out that offenders may be making a rational choice when committing crime by weighing up the implications of their crime. Rational choice theory is one of the fundamental theories of environmental criminology, together with geometry of crime and routine activity theory (Brantingham, Brantingham and Andresen, 2017). Geometry of crime is adapted from the work of Lynch (1960) and aims to understand how crime is clustered in certain areas through applying a number of rules to establish patterns of behaviour. The rational choice perspective consists of 6 core concepts and 4 decision-making models as discussed by Cornish and Clarke (2017) and covers the concepts of choice and decision-making in the committing of crime by offenders. Its ideas are especially

applicable to situational prevention of specific crimes such as property crimes, and analysing and disrupting identity theft. More recently it is being considered in more expressive crimes such as murder (Cornish and Clarke, 2017).

Lundrigan (2016, p.196) provides an overview of the distance between murder sites to body deposition sites by summarising journey-to-murder research from a range of sources spanning 59 years, though the types of murder are wide - ranging and may have very different characteristics. Child homicide, for instance, is often characterised by concealment of the body (Beauregard et al, 2008, Hanfland, Keppel and Weis, 1997) and having a pre-selected body deposition site (Hanfland, Keppel and Weis, 1997), away from the murder site. This may be partly due to the size of the victim. Adult victims of homicide were normally found further away and often were not concealed (Beauregard et al, 2008).

Lundrigan (2016, p.189) suggests that a body deposition site away from the murder scene is favoured by the offender who kills someone unknown to them, in an area familiar to the offender. If the victim and perpetrator were known to each other, the victim would be more likely to be disposed of at a separate location if the murder took place in the offender and/or the victim domain.

Hunter et al (2013) points out that many clandestine graves are marked in a way that allows the offender to revisit the site, either for peace of mind or to check for any signs of disturbance, though some forensic psychologists also point out that it may be for sexual or emotional gratification, a point borne out by serial killer Ted Bundy's description of his body deposition sites (Nelson, 1994). Hunter et al (2013) mention winthroping, but more in relation to the caches, which need to be easily locatable and accessible, but goes on to describe (as does Topping, 1989) how Ian Brady took photographs of Myra Hindley at some of the graves posing against a characteristic landscape feature.

Donnelly and Harrison (2009, p. 197) identified three distinct methods of searching for BDS; intelligence-led, feature focused and scenario-based, though in reality, most searches are a mixture of intelligence and scenario-based searches (Policing, 2015) (SS 3).

Major legal trials involving genocide depend upon the search for and location of mass graves and this is discussed in-depth by Cox et al (2008). Sturdy Colls also indicates the importance of finding evidence (2015) as the Nazis went to extraordinary lengths to conceal evidence of their extermination camps, including mass graves, purposively removing all physical reference points to their existence.

As new technologies emerge and become integrated and incorporated into search such as UAVs, side scan sonar, resistivity, magnetometry, remote heat-sensing equipment, the danger is that too much emphasis and reliance is placed upon technologies to the detriment of simpler methods of detection, as Owsley identified (1995) and also picked up later by Humphrey (2010). Basic skills such as navigation, map reading, tracking and effective and informed searching (rather than just looking for) and communication is crucial for an investigation and trained professionals are essential, regardless of whether these professionals are paid or voluntary. The CATCHEM database (Aitken et al, 1994; COS/CATCHEM, 2007) may be utilised by Senior Investigating Officers (SIOs) (see Chapter 4) to help inform choices on searching for suspicious missing persons, where 3rd party involvement is suspected. It is based upon many years of collating data from suspicious missing persons and homicide enquiries. It gives suggestions for lines of enquiry and offers guidelines to senior investigating officers.

Donnelly and Harrison (2017) specifically argue against using traditional SAR techniques in searching for a homicide victim, noting that a victim won't be mobile and that thus there is no correlation of time and distance, nor that the victim will be actively seeking discovery (as arguably may be the case with missing persons). They argue that an offender will have chosen a location that may have no relevance to the victim and thus the victim's last known point (LKP) may not be relevant. However, Lundrigan (2016) argues that victim's LKP is significant as is also borne out by Hanfland, Keppel and Weis (1997).

It is, however, imperative to understand that SAR techniques and approaches are not just used for lost persons (people who have lost their way or are injured, and wish to be found); it is also used for missing persons, a majority of whom either

lack awareness they are missing (as is the case in dementia sufferers) or who do not wish to be found (such as runaways, suicidal people and people who have gone away to ‘think things over’). SAR techniques are aimed at finding items and people, regardless of their wish to be located.

However, contrary to Donnelly and Harrison’s view, some SAR people (SAR 1, 2 & 3) and search professionals (PolSA 4, SS 3) argue against this and draw upon their experience to point out that missing people and some BDS are regularly found by ‘winthrop’ or ‘reference points’. A highly experienced tracker noted that perpetrators used reference points to return to the grave to check it had not been disturbed or to complete, or improve upon, concealing the site (T1). Furthermore, based on the data within the CATCHEM database the same track offset distances appear to apply to BDS as to male despondents within the SAR databases. Within the field of ‘wayfinding’ and tracking it is well-recorded that people are naturally drawn to reference points or markers in their environment, be it a natural environment or a people-made environment (see also 2.5.4).

2.5 Winthropping, reference points, feature focus search and wayfinding

2.5.1 Winthropping

Winthropping is taught to British military personnel and is not just confined to the Royal Engineers Search Advisors (RESA) and Royal Engineers Search Teams (REST). After the method was developed in Northern Ireland in the early 1970s, it was taught to most serving personnel on tour there. However, it was a classified technique and therefore it is hard to find many accessible publications on the topic as illustrated in table 2-2 below. This table shows available publications that mention winthropping and the databases where they could be found. The difference between databases may possibly be explained by considering that literature may not have been coded with winthropping as a keyword. Winthropping was used as a search term for all these databases. This search with winthropping as a key search word was carried out several times over the years. Table 2-2 represents the Summer 2018 version.

It is worth bearing in mind that there is more literature available on winthroping in military archives, but these are not generally accessible to non-military or security-cleared personnel.

	Google Scholar	Scopus	Springer Link	Wiley Online Library
Young et al (2013)	✓	✓	-	✓
Bartelink et al (2016)	✓	-	✓	-
Sturdy Colls (2015)	✓	-	✓	-
Humphrey (2010)	✓	-	-	-
Donnelly and Harrison (2015)	✓	-	-	-
Hunter et al (2013)	✓	-	-	-
Lotter et al (2016)	✓	-	-	-

Table 2-2 Overview of available literature on winthroping in databases

Yet the technique is mentioned in passing in archaeological literature (Hunter and Martin, 1995; Hunter et al, 2013 and Sturdy Colls, 2015), though Sturdy Colls does spent a paragraph describing winthroping accurately; calling it an '*assessment of the probability that a burial occurred in a given area based on the markers within the landscape and the ability to navigate them...*'. Most references to winthroping in the literature refer to 2 key texts: Killam (2004) and Hunter et al (2013). Wyatt (2017) gives a description of winthroping based on his extensive experience with the technique (see section 4.5 Reference points and body deposition sites), but his book was privately published, so not generally accessible either. Donnelly and Harrison do describe winthroping in various articles over the years (Donnelly and Harrison, 2008; 2017), but replace the term with feature focus search. Interestingly, most of Donnelly and Harrison's published papers do not show up in academic databases when searching for the term 'winthroping'. Humphrey (2010), Forrest (2013) and Buxton (2017) all describe winthroping in their theses. However, it is fair to say that, despite an extensive knowledge base and a wealth of experience of the technique within the field of counter-terrorism, both at home and in the theatre within the police,

military, CT and private sector, as well as in gang-related crime, the definitive textbook, or in fact any book on the subject, remains to be written. Winthropping is covered in the PolSA Manual (Policing, 2015) in the chapter on area search. Yet despite this apparent lack of academic justification for actively using this technique it continues to be used on a daily basis and practitioners all comment on its usefulness and effectiveness in terms of locating caches and IEDs. Some PolSAs also commented upon its use in the search and location of BDS (see chapter 7).

2.5.2 Reference point search

Reference point search as a term has replaced the word winthropping, after Lt Winthrop's family asked for the use of his name to be dropped. In effect it is used to refer to exactly the same thing, but like the term feature focus search its focus is more on a physical landmark rather than a way of moving within and across a landscape (Hunter, 2013) or using prominent features, markers and boundaries which may influence, motivate or constrain a person's behaviour in a given landscape (Killam, 2004). It is used within police circles within the field of search, but no specific evaluation of the use of reference points appears to have been undertaken. However, it has been mentioned a number of times in the qualitative data interviews with search specialists, including trackers and PolSAs (Chapter 7).

2.5.3 Feature focus search

The term 'feature focus search' has been used by Donnelly and Harrison since at least 2008 and has been described as: *"The identification and subsequent searching of physical landmarks within the search area that could be easily relocated by the offender. The offender may have a particular reason to identify a landmark or may be chosen for their ease of access, relocation purposes or concealment opportunities"* (Harrison and Donnelly, 2008). As they point out this assumes that the offender either wishes to relocate the burial or wishes to be precise in locating the grave.

Donnelly and Harrison saw feature focus search as part of winthroping and described it as such in an article of the proceedings of the 3rd International Conference on Engineering Geophysics, session on Forensic Geosciences (2015). Donnelly (a geologist, who practises geoforensics) and Harrison (former UK National Search Advisor, now working for Australian Federal Police) continue to work together on the geophysical aspects of the search and location of body deposition sites and intend to publish a book on the matter in 2019. Feature focus search is their replacement term for winthroping, however as the quote above shows it describes the physical primary, secondary and tertiary landmarks, rather than the psychological approach as described by Wyatt (2017), who sees winthroping more as a way to think like the 'enemy' and utilise the landscape. Donnelly and Harrison (2017) also mentioned similar terminology in feature focus search to winthroping, but without the military detail in the execution of a winthrop search. Reference is made to primary, secondary and tertiary reference points in feature focus search, for instance referring to a layby to park a car, a group of rocks, and a solitary tree further in the distance respectively, whereas in winthroping a primary reference point is identified and subsequently searched out (often in fingertip manner) to identify a secondary reference or winthrop point (Policing, 2015).

2.5.4 Wayfinding

At the very beginning of this research, someone pointed in the direction of wayfinding as a means of exploring landscapes and reference points. In this section, wayfinding is explored as its components are applicable not just to architectural structures but show similarities to reference points and winthroping as discussed above. Wayfinding, i.e. a purposeful journey from some origin to a destination, is one of the most common problems humans may encounter. Kevin Lynch coined the phrase way-finding (1960) describing it as a 'map for the direction of movement' and as the original function of an environmental image and as a basis upon which an emotional association may have been built. This is supported by Brantingham et al's assertion that routine activity theory accounts

for crimes as opportunities taken within the awareness space of a day to day life (Brantingham, Brantingham and Andresen, 2017).

The difference between navigation per se and wayfinding is that the former manages or directs the course of a person, whereas wayfinding includes paths and routes the traveler identifies, determines and follows between an origin and a specific and distant destination and which cannot be seen from the start point of the journey. Wiener et al regard it as the most prominent real-world application of spatial recognition (2013). Wayfinding uses cognitive maps which Häkkinen et al (2007) describe as long-term memory structures to enable the retrieval of spatial relationships on large well-learned or remote areas, though Golledge prefers to describe it as internal spatial representations (1999). Either way, wayfinding uses familiarity and the recognition of features in the landscape, which are also of importance in winthroping and for the rural deposition of a body.

Golledge (1999) describes the importance of landmarks in his table on geometric components of spatial knowledge, where he shows landmarks' use as a navigational aid and he identifies landmarks in wayfinding as either:

- Strategic foci (towards or away from which one travels)
- Intermediate foci on routes that assist spatial decision making
- Significant physical objects that stand out from their environment (and are used as reference points)

Dudchenko (2010) explains that in order not to go missing or get lost, one must recognise one's surroundings, have the ability to use familiar landmarks and be able to maintain orientation. Syrotuck (2012) states that removing one identifiable element such as a landmark from a landscape will cause people to become lost. Klein (1993) describes some of the effects of stressors on decision making such as psychological pressures (i.e. time pressures and exposure to threats) and physiological factors (adrenaline reactions and startle reflexes). And Symonds (2017) explores the role of the influences on the physical body during wayfinding in a sociocultural context, although he stays clear from describing offender behaviour within wayfinding. These all demonstrate that there are many factors that can influence decision making and may suggest that matters such as

orientation, reorientation and using landscape features or landmarks both as orientation cues or memorable locations may play an important role in navigating a landscape.

Within wayfinding three kinds of movement or journeys are known as commuting, exploring and questing.

Commuting describes traveling along a familiar route and mainly uses piloting and repetition of locomotion patterns.

Exploring refers to travel without a specific destination in mind, but returning to a familiar place and utilises piloting, path integration and navigating with a cognitive map.

Questing is used to find a specific destination known through symbolic means using piloting and navigating with a cognitive map (Allen, 1999).

In 2014 when *Alice Gross* was raped and murdered in London, the offender was on a route that was familiar to him; known as 'commuting' in wayfinding terms.

The basic process of wayfinding involves four stages:

Orientation is to determine one's location, in relation to objects/landmarks that may be nearby and the desired destination.

Route decision is the choice of a course of direction to the destination.

Route monitoring is checking to make sure that the selected route is heading towards the destination, this may be done through recognising familiar landmarks or reference points.

Destination recognition is when the intended destination is recognised.

(Lidwell, Holden and Butler, 2010).

This sounds similar to winthroping; knowing where one is, where one wants to go to and knowing when one has reached one's destination, though with winthroping one is also making sure one is not observed (*cf* Wyatt 2017). This is further explored in Table 8-1. Whereas winthroping does not have much

available literature, wayfinding and its complexity and applications in a wide field, are well-tested and researched and it is the similarities to elements of winthroping that may make it possible to draw upon wayfinding theories and applications, to understand winthroping and gain insight into the use of reference points in a landscape.

2.5.5 Lowland Search and Rescue

Within the UK SAR community, there has been a great interest in the last few years in collating data at both a local, regional and national level. This followed on from Koester's original collation of data and establishing the ISRID database, on which he subsequently based his book 'Lost Person Behaviour' (2008). The original missing persons' research in the UK was conducted by Perkins and Roberts (2005) and this was updated in 2011 (Perkins and Roberts, 2011). Perkins pointed out that Koester's assertion that ISRID contained over 50,000 data entries for missing persons when upon closer reading this number goes down significantly to 16863 (2012). Furthermore, a lot of data specifically relevant to the UK is missing, such as exact location found. Koester assumed that missing person behaviour is consistent across an eco-region, something which Perkins successfully challenges (2012). Perkins suggested that using UK data from both police and SAR sources should provide more accurate guidelines to locate missing persons in the UK.

Closer cooperation between academics and the police led to the production of the Grampian data (Gibb and Woolnough, 2007) and eventually this was followed by iFind (Eales, 2015 & 2016) and other more regional variations such as ELPIS used at Thames Valley Police (Detective 1). The Missing Persons Bureau hopes to bring out a National Register at the end of 2019, which will use data put into local systems such as COMPACT to populate the National Register. Furthermore, there is an open access live website called KSTAT, where national SAR teams put in missing persons data relating to gender, age, missing from, misper categories, distance from track found and outcome (KSTAT, 2018).

Much has been written in the USA on SAR and the key texts are Bannerman (1999), Cooper (2005), Young and Wehbring (2007), Koester (2008), Syrotuck

(2012), Glaus (2014), and Fontaine and Judah (2017). It is uncommon to utilise SAR teams in the search and location of BDS, yet SAR search techniques are effective and the professional volunteers which make up the SAR teams are enthusiastic, keen, resilient, self-sufficient, equipped, experienced and well-trained searchers. Their reliance on statistics to inform their search approaches and techniques and ability to embrace new approaches (such as successfully adopting new training techniques for their search dogs and implementing the use of UAVs) makes search and rescue organisations a flexible asset that is currently underutilised.

2.5.6 Tracking

Tracking is both an investigative strategy as well as an operational tactical tool used to locate people, animals, evidence and can be used to tell the story of a journey. It is both ancient and modern and can be learned by anyone willing to put the time in to practising tracking. Its use varies per country and law enforcement agency and despite proven success in a variety of settings both within border patrol, military, conservation, and police agencies it continues to be underutilised and under-researched (Trackers 1, 2, 3, PolSA 4 and RESA 1).

2.5.6.1 Tracking

Tracking is an ancient art which may date back as long as 2 million years (Kearney, 2009) when *Australopithecus africanus* roamed the earth and evidence suggests was the earliest meat eater amongst our ancestors. Hunting by its very nature involves stalking and tracking (Carrs, 2009; Kearney, 2009), and as discussed in Combat Hunter below (2.5.6.2) these skills are highly transferrable. People tracking is not simply following a trail or track, it is concerned with clue consciousness and situational awareness (SA) and relies upon ground sign awareness (GSA). It will help determine direction and speed of travel, the number of people in the party, whether they are injured, time since they left their tracks and so on. Don Cooper (2015) relates a story of how he taught his daughter to track from a very young age by gradually training and honing her observational and GSA skills.

Tracking is best utilised early on in a search (Taylor and Cooper, 2014), though it can be used as a search progresses. One tracker relates how he managed to track to an old BDS as the area was rarely visited by humans and the original tracks were still available due to the nature of the terrain 3 months later (T2). Taylor and Cooper (2014) teach the '*Step by Step Method*' of tracking, which can be taught to virtually anyone and will help searchers to become better searchers and not destroy clues and evidence. All trackers, whether military, police, SAR or search specialist, emphasise the importance of constant training and observation (Kearney, 1999; Carrs, 2009; Taylor and Cooper, 2014) (Trackers 1, 2 and 3).

2.5.6.2 Combat Hunter

Within the military context it is interesting to note that the US military developed the concept of Combat Hunter (CH) in 2006, when they realised that military personnel with a background in hunting, were able to bring specific skills to their units and showed a (sometimes innate) ability to observe, orientate, decide and act, known as the OODA loop, which became the US Marines operational decision-making model. This is discussed in Stevenson et al (2013). The US military's ability to draw from experience outside their usual field greatly benefitted the units it was applied to in terms of IED detection rates going up and injuries and fatalities going down (United States Marine Corps, 2015). Stevenson et al (2013) note that the British military developed a similar approach with their GSA course as taught by the jungle school in Brunei, an approach confirmed by Dean Williams MBE (2015).

Combat Hunter consists firstly of observation of the environment, search, primary cues, such as knowing what to look for, secondary cues such as knowing the baseline for both the physical environment and human behaviour, followed by thinking like the enemy. CH and GSA both contain elements of enemy combatant planning, not dissimilar to the approach Lt Winthrop used to put oneself in the IRA's heads when searching for hostile caches.

2.5.6.3 Tracking in other contexts

Tracking is used extensively in other fields such as law enforcement on borders (notably within the US Border Patrol), wildlife conservation, to both track

endangered animals and poachers (Trackers 1 & 3) (Taylor and Cooper, 2014: Lotter et al, 2016), after car crashes to locate either decamped perpetrators (typically drivers under the influence from alcohol or drugs evading arrest/testing) or injured/confused drivers or passengers who have wandered off (Taylor and Cooper, 2014), though in the UK tracking dogs are often used for this. Police within the UK have access to a register of experienced trackers but are reluctant to train their own personnel in tracking (PoISA 8). Police in the Netherlands on the other hand, have started training their dog handlers in basic tracking (a course over 10 days) to increase SA and GSA, which has been enthusiastically received by the dog handlers who have reported excellent results from their training (Tracker 1, PDH 1 & DH 2). In the UK trackers have been successfully used to locate evidence and weapons, in one case even being helicoptered in across county borders (PoISA 7). When there are high profile missing persons this will invariably attract people who either claim to be trackers or who are, in fact, trackers, but without the specific expertise needed in the given situation. This lack of distinguishing between amateurs, inappropriate experience in a tracker and professional trackers experienced in human tracking and GSA can be detrimental to the outcome of a given case. Consider the case of **Raoul Moat** in 2010, when a well-known TV tracker offered his help to the police, but failed to locate him, yet continues to lecture and give interviews on the case. This tracker walked within 20 metres of the fugitive gunman (PoISA 8) but failed to spot him. In such a specific case of 'man-hunting' military trackers, who are intensively trained for such purposes would probably have been a more appropriate choice (Trackers 1, 2 & 3).

2.6 The conclusion of critical literature review

As the above critical literature review shows, winthroping is mentioned in passing in the available and accessible literature, however there is not much analysis of the technique apart from short descriptions in Killam (2004), Cox et al, (2008), Hunter et al (2013), Sturdy Colls (2015), Donnelly and Harrison (2017) and Wyatt (2017), nor how it could be utilised more effectively. This shows the

need for a more in-depth exploration of the potential use of winthroping in the search and location of rural body deposition sites.

There is no discernible literature regarding the use of tracking techniques being utilised in the search and location of body deposition sites in the UK, yet there is anecdotal evidence that it has been used (see Chapter 7). It would be most useful to see whether tracking techniques and the experiences within the American Marine Corps with Combat Hunter and the OODA loop might have a bearing upon the search and location of BDS. Furthermore, despite being extensively used in civil planning and architecture, wayfinding has so far not played a role in understanding how people move in a landscape in relation to hiding or searching for something.

SAR techniques and their use of statistical data to plan, develop, manage, and execute an effective search strategy for missing people may have specific approaches and techniques to offer to the police to aid in the search and location of BDS. Elements of both SAR training (see 5.4) and SAR CPD requirements (see 6.3.2) could be beneficial to the police. There is a vast amount of experience within the police, military, and lowland search as well as within organisations and companies run by specialised private search professionals, yet these remain to be utilised to their best advantage.

The next chapter will look at the methodological approach used for this research and how it was applied to the specific research question as to whether winthroping, lowland search, and rescue techniques and tracking may play a role in the search and location of body deposition sites.

3 METHODOLOGY

3.1 Background

This research will be looking at the potential role of winthroping (reference point search) and other search techniques in the search and location of rural body deposition sites in 'no body' homicides. The research was undertaken using a critical literature review, undertaking relevant search training with a variety of professional search organisations and comparing quantitative data about track offset distances from a path between rural body deposition sites and locations where missing persons were found as well as semi-structured interviews with search professionals to gather qualitative data on search techniques as applied to the SAL of BDS and the potential role of winthroping and other approaches.

Rural body deposition sites are searched for and located by a variety of approaches; generally made up of surveying, testing, mapping, scenario-based and/or feature-focused searches and intelligence (Killam 1990; Hunter et al 2013). All methods have their advantages and disadvantages and usually a combination of techniques is used.

Search strategies for the location of rural body deposition sites must take into account various considerations including the proposed search type, outer boundaries of search area, resources available, geology and ground conditions (Donnelly and Harrison, 2017). Search methods can be divided into invasive/destructive methods and non-destructive methods. Search techniques such as scenario-based map searches, ground surveys, intelligence-informed search or aerial searches are non-destructive in that they tend to not destroy clues (Killam, 1990; Hunter et al, 2013; Donnelly and Harrison, 2017). Large scale line searches, especially when using probes or members of the public, tend to be not only personnel-intensive, but are also likely to destroy potential clues (Ritz et al 2009).

The advances in technology in recent years has led to the extensive use of GPR, magnetometry and UAVs in the search for body deposition sites, where it is suitable to do so. However, it is important not to lose sight of the traditional

archaeological search methods such as ground surveys, topographical and vegetation differences (Hunter et al, 2013).

Winthroping and the other search approaches discussed in this thesis are not traditionally considered in the search and location of body deposition sites, and that is what will be explored in this thesis. When a body deposition site is not immediately located, there will most likely have been the intention to hide the body and therefore it might be possible to apply search techniques and approaches from other disciplines.

3.1.1 Approach taken to the methodology

Originally the research focussed upon the role of winthroping in upland areas, but after initial reading around the subject, it was felt it would be beneficial to undertake some training in the field of search with a view to understand the concept of search better and to be able to meet with practitioners. Eventually, this led to quite intensive training in search techniques with a variety of organisations. In the meantime, the specific role of winthroping in upland areas was covered by another student (Forrest, 2013), leading to the current focus of search techniques in the location of body deposition sites. Training in search, analysis of secondary track offset distance data and qualitative interviews with search professionals formed the basis of data collection and analysis.

This research subsequently focussed upon the question of whether there was a role for winthroping in the search and location of body deposition sites. Winthroping is used to detect weapons caches by the British military and PSNI in Northern Ireland. Table 3-1 below shows some of the similarities between the requirements for a weapons cache, such as used by the Provisional IRA, and a body deposition site, such as used by a homicide offender. There are differences as well as similarities; a Provisional IRA's weapons cache was chosen specifically to not only to be concealed, but to be locatable by others in order to allow for the retrieval of the weapons by a third party (which was part of their MO). A body deposition site is often concealed, which may or may not be co-incidental, with the main purpose being that a delayed discovery may lead to loss of forensic evidence, but whilst the offender is normally (but not always – see **Martin Bell** p

122) able to locate the body deposition site, the aim is not for it to be locatable by third parties. Accessibility is a pre-requisite as well as proximity to the access route for practical considerations due to the weight and difficulty manoeuvring of a dead body, especially by a single offender. There are different considerations for a body deposition site and figure 3-1 aims to show some of the unique motivations and characteristics as well as common factors in body deposition site decisions, weapons caches and locations where suicidal male despondents are found. It is these common factors that may be useful in exploring and exploiting interdisciplinary search techniques and approaches, which is what this research aims to investigate.



Figure 3-1 Mutual and unique characteristics between BDS, weapons caches and despondents' 'found' sites

There are different motivations for location considerations, which are clarified below.

Familiarity: People who are suicidal will select a place that is familiar to them and usually has some significance to them. This is especially true when the (attempted) suicide takes place in a rural location, such as a wood or rural landmark. In the case of an offender intending to hide a body this will be normally be in a place familiar to them. This means they are familiar with the exact location, the chances of coming across other people.

Concealment: Concealment is a common feature in homicide, suicide and weapons caches. When an offender is trying to get rid of a body it is important for the body to be concealed to delay or prevent discovery. The longer a body is concealed the less forensic evidence will be available due to tissue and other evidence deterioration. In suicide concealment is essential to ensure that the intended suicide can go ahead and won't be interrupted by passers-by or concerned police officers and lowland rescue personnel. Concealment in weapons caches is crucial and it one of the five factors associated with weapons caches (the other ones being availability, non-attributable, accessible and locatable) in winthropping. Concealment is important as it prevents detection of the weapons/explosives, arrest of either the hider or the collector, and exposure of the unit responsible of the weapons cache.

Avoidance of detection: It is important to avoid other people to prevent detection in all three instances. A suicidal missing person avoids contact in order to kill themselves and not be interrupted in doing so. A person making, locating or using a weapons cache will need to avoid detection as otherwise they would fall under suspicion, be arrested, charged and sentenced to lengthy jail sentences. An offender hiding a body would have a difficult time explaining a body in their possession away and so will go to some lengths to avoid contact with other people whilst in the process of transporting and hiding that body.

Prevent delay/discovery: In the case of a suicidal misper, it means they are unable to be able to kill themselves at that time and a repercussion of being found alive will normally involve an involuntary stay in an inpatient mental health unit.

An offender will not want the body deposition site to be located in order to avoid discovery of the body, to delay discovery so that potential forensic evidence will deteriorate, and to avoid charges and subsequent prosecution and imprisonment for manslaughter or murder.

Repercussions if found: As per ‘avoidance of detection’ and ‘prevent delay/discovery’.

Just out of sight: Being just out of sight is one of the principles of least effort, as it is least risky and requires less effort than transporting a body some distance. Less exposure to the possibility of being found with a body is better as it avoids detection. For a suicidal missing person, being just out of sight is common and it is both important in terms of the principle of least effort and to still have a connection with their life. ‘Found’ locations often reflect this as evidenced in the missing persons data bases.

This research also looked at other innovative search approaches and whether these could be applied to the search and location of body deposition sites. In table 3-1 below some of the similarities between a BDS and winthroping, tracking and SAR search approaches are presented. There are, of course, many differences as well, however, the similarities between the potential considerations for a BDS and the approaches of the search techniques are discussed in this thesis.

SIMILARITIES	BDS	WINTHROPPING	TRACKING	SAR APPROACHES
Concealment	✓	✓	-	✓
Availability	✓	✓	-	✓
Non-attributable	✓	✓	-	-
Accessible	✓	✓	✓	✓
Locatable	✓	✓	✓	✓
Familiarity with site	✓	✓	-	✓
Direction of travel	✓	✓	✓	✓
Speed of travel	-	-	✓	✓
Lost person behaviour	-	-	✓	✓
Use of reference points	✓	✓	✓	✓
Just out of sight	✓	-	n/k	✓
Track offset distance	<100m	-	n/k	<100m

Table 3-1 Similarities between a BDS, winthroping, tracking and SAR approaches

Furthermore, two sets of secondary distance data were compared to establish whether there was similarity between the distance from path to body deposition site and the distance from a path (known as track offset - see figure 3 - 4).

3.1.2 Nature of the study

Apart from training with organisations specialising in search, track offset distance data were compared from body deposition sites to search & rescue locations of found missing suicidal males. Furthermore, practitioners of search were interviewed and a literature review was undertaken. The purpose of the track offset data was to determine whether there was a possible correlation between the two sets of distance data; a first step to establishing whether SAR techniques and approaches might be transferrable to homicide investigations in relation to so-called 'no body' murders. This mixed method approach allowed for a comparison and integration of the main findings from both the track offset distance data with perspectives of stakeholders (the search professionals and homicide investigators being interviewed). This approach is based on the convergent parallel mixed methods as described by Creswell (2014). With a mixed methods approach to research there are various ways to integrate the research results, for instance through triangulation, following a thread and the mixed methods matrix (O'Cathain et al, 2010).

Triangulation is the method of choice here and is used to describe the process of approaching a problem utilising different methods to obtain a more whole picture. This process is often used in the health services. Using a convergence coding matrix allows for comparison between quantitative and qualitative data and using meta themes and meta subthemes shows convergence, dissonance or complementarity between the data (O'Cathain et al, 2010).

Table 3-5 below provides an overview of the research approaches used for this research and the data collected and the associated methodological theories.

Methodology	Method	Participants/sources	Participants ethnography	Data collected
Archival research	Critical literature review	Books, journal articles, reports, websites, conference proceedings, newspaper articles, book sections, training manuals	n/a	Research on missing people, search techniques for location of body deposition sites, winthroping, lowland search techniques, and tracking
Pragmatic inductive approach	Training	Researcher LSO → PoISAs →LST→TL/SO/SP→SM	Gender: 5F/15M – PoISA Gender: Variable - LR Age range: 20s-50s	Pre-requisites to training, length of training, specific skills taught, CPD, resource allocation, what informs search, photographs, training manuals, observations of training
Pragmatic deductive approach	Quantitative data - distance	HI/CATCHEM/AIR/ISRID/CSR/KSTAT databases	n/a	Track offset data: From path to BDS/ place where the despondent/suicidal male is found
Pragmatic deductive approach	Quantitative data - training	Researcher, LSO, PoISA, LR	Gender: 5 F/15M – PoISA Gender: Variable – LR Age range: 20s-60s	Duration of training, pre-requisite to training, participants (n), CPD requirements
Hermeneutic phenomenological approach	Qualitative data – semi-structured interviews (in person)	PoISAs, detectives, LR, trackers, SIOs, analysts, REST, forensic psychologists, RESAs, FA, FG, search specialists	Gender: 5F/42M Age range: 30s – 70s	Oral response to semi-structured questions recorded, transcribed, put into NVivo and coded to relevant themes
Hermeneutic phenomenological approach	Qualitative data – semi-structured interviews (by email)	PoISAs, SA, FG, FA, detective, analyst	Gender: 2F/6M Age range: 40s – 60s	Verbal responses to semi-structured questions by email. Put into NVivo and coded to relevant themes

Table 3-1 Research approaches

3.1.2.1 General concepts behind research design

A research paradigm as described by Saunders et al (2016) is a set of assumptions (both basic and ‘taken for granted’) which will underwrite the frame of reference and the mode of theorising. Research philosophy describes a system of assumptions and beliefs about the development of knowledge in a particular field (Saunders et al, 2016). Assumptions are made about human knowledge (epistemological assumptions), realities encountered in research (ontological assumptions) and the extent and ways one’s own values may influence research was undertaken (axiological assumptions) (Burrell and Morgan, 1979; Davies and Francis, 2018). A research onion demonstrates the various layers of research methodological theory and this is illustrated in figure 3-1.

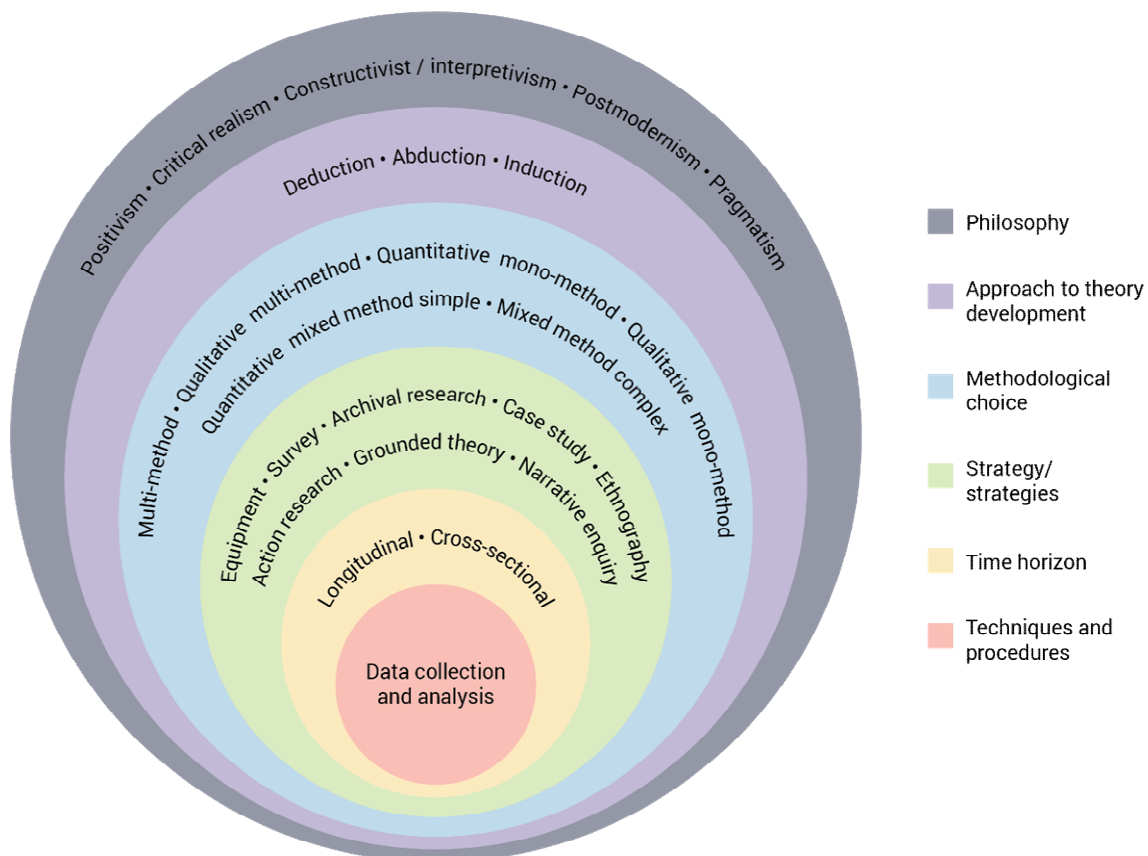


Figure 3-2 Research onion (cf Saunders et al 2016)

3.1.2.2 Research approaches

Saunders et al (2016) and Badewi (2013) identify 5 main different approaches to research; namely positivism, critical realism, interpretivism, postmodernism and

pragmatism and discuss these within the contexts of epistemology, ontology, and axiology. Based upon their findings this research can be classed as using a pragmatic inductive approach with some elements of interpretivism (see also table 3-1). Blaikie (2007) uses slightly different terminology, describing pragmatism as conventionalism and dividing concepts such as realism into various subsets within an ontological context. Blaikie also discusses more specific approaches relating to social science inquiries, which are beyond the scope of this thesis. For this research Badewi's (2013), Creswell's (2014) and Saunders' (2016) approaches are used.

The nature of the reality (ontology) was complex and rich with a flux of processes and experiences, such as the different ways in which search professionals were trained, and the approaches and techniques they used. Search professionals came from a wide variety of backgrounds, all with their own experience, ethics, and opinions.

Within an epistemological context, there was a focus on problems & practices and the aim was on problem-solving and working towards an informed future practice. The research was value-driven and was initiated and sustained by the researcher's doubts and beliefs. This led to a mixed methods approach consisting of small samples, in-depth investigations, quantitative and qualitative data gathering and analysis with an emphasis on practical solutions and outcomes, as well as suggestions for further research, rather than a purely quantitative approach. Interviewing highly experienced professionals in the field of search would garner rich qualitative data. For most search professionals this was the first time they were interviewed and listened to and it also gave them a chance to reflect upon their practice and approaches.

Saunders et al (2016) offer a 'research onion' (Figure 3-2) to illustrate the different layers of research methodology and approaches. From the outer layers of the philosophies discussed above, it moves inwards to approaches, methodological approaches, strategies, time horizons and techniques, and procedures. For this research a mainly inductive (but with some deductive elements) approach was used; using mixed methods, with various strategies, such as including some

ethnographic data on the search professionals, archival research on winthroping and wayfinding and purposive sampling by interviewing search professionals. Below is an individualised 'research onion' (figure 3-3) as relevant to this research, to illustrate the key components of the research approach taken for this research.

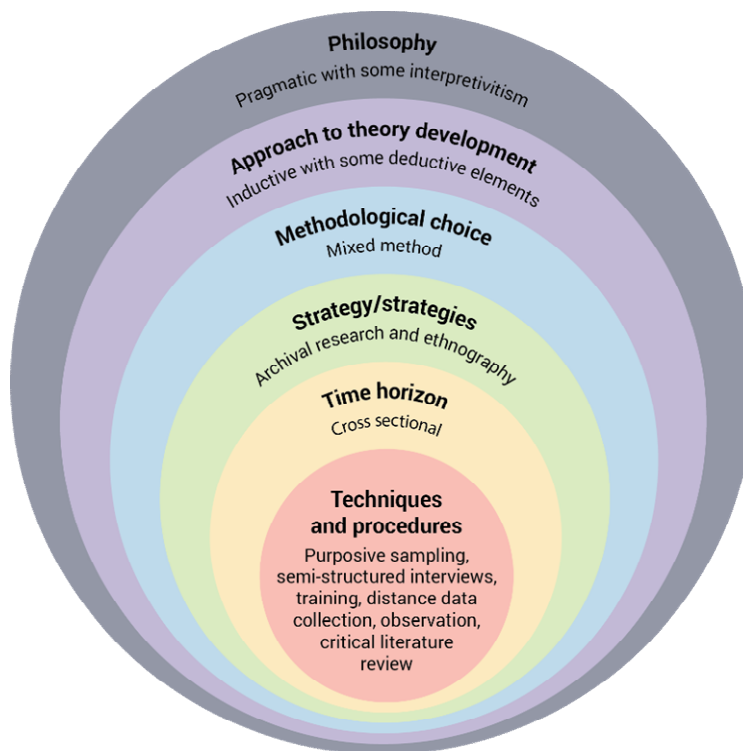


Figure 3-3 Research approaches to this study

3.2 Time horizons

A time horizon describes the time framework of the completion of a piece of research (Saunders et al, 2016). This research was undertaken as a cross-sectional study, a window onto the topic at one point in time, rather than longitudinal study, which would involve collecting data into the same phenomenon over a prolonged period of time to study change and development of that phenomenon (Saunders et al, 2016). However, some of the interviews ended up having longitudinal aspects as they either covered different persons in the same role over an extended period or the interviewee had been practising for many decades. Undertaking search training meant that this research took longer than the usual 12 months. In some cases, to be able to interview certain people

would also require a long 'run-up' period, as contact had to be initiated through networking or introductions. Some interviews, after having been set up, were then abandoned as the person in question retired or simply fell off the radar (which was normally either through retirement or work-related situation, such as being sent abroad on a specific mission). The term 'time horizons' therefore very much describes the duration of this research and NOT the duration of a search or homicide investigation.

3.3 Positioning this research

Where to position this research? Is it aimed at a strategic, tactical or operational level? Within the constraints of this study the various levels of command are defined as follows:

Strategic: This concerns itself with the future and long-term goals of an organisation such as Lowland SAR, but can also inform practice within a department within an organisation such as police search specialists or the Serious Crime Directorate (SCD). At the strategic level, it can also identify areas for further, relevant and practical, research. It can also affect wider issues such as ethical or political implications, which are, however, outside the immediate area scope.

Tactical: Tactical planning supports the strategic vision and means developing specific plans to implement strategies; such as improving upon aspects of current police search training, the need for reflective practice for both LR and the Police and interagency cooperation.

Operational: This describes the practical on the ground management of day-to-day work and in this case would mean taking on the teaching of map reading and navigation to Police Search Advisors (PoSAs) and Licensed Search Officers (LSOs).

It is envisaged that the research output may be used at all levels as an understanding of 'informed search' is important for strategic input, tactical oversight and operational practice on the ground.

3.4 Research design

3.4.1 Introduction to section of strands of research

This research involved analysis, history, techniques, interviews, critical literature review, training, quantitative and qualitative data analysis. Each is discussed below in more detail.

3.4.2 Analysis of current status

Within the world of search in the UK, there are new developments ahead. More interagency cooperation and changes to search curriculums (SAR 1 and PoISA 8) are beginning to emerge and this is discussed in chapter 4. Some interesting initiatives such as the establishment of a Centre of Excellence for Missing People (CEMP) (including long-term suspicious mispers) (Detective 3, SAR 4, Analyst 1) and the police handing over responsibility of certain categories of mispers to professional voluntary organisations is also described (PoISA 4 and SAR 1).

3.4.3 History of the current status of search – how did we get here?

Search plays an important role in the location of a body deposition site and the field of search has undergone many developments in recent decades. Below are outlined the three relevant fields of search which are covered in this research. They span the field of military Counter Terrorism (CT) search, police CT search and training and how Lowland SAR started.

3.4.3.1 Military – Northern Ireland 1969

After the deployment of the British military to Northern Ireland following the start of 'The Troubles', it was realised more effective search techniques were required to foil the Provisional IRA's attempts to destabilise the province. Lt Winthrop developed a method to search rural areas to locate IRA hiding caches. This method was known as winthropping. It is now also known as reference point search or feature focus search. It proved to be highly successful and effective (see Chapter 7 for more details).

3.4.3.2 Police – Brighton Bombing 1984

Following the bombing of the Grand Hotel in Brighton in 1984 during the Conservative party conference, the lack of effective police search techniques to prevent such attacks was evident. This led to the rapid establishment of a training initiative, delivered initially by the military Royal Engineers Search Advisors and officers of the RUC to UK mainland police officers, later known, after qualifying, as Police Search Advisors (PoSAs) (Wyatt, 2017). There are currently around 660 PoSAs in the UK.

3.4.3.3 Search and Rescue – Sarah Payne 2000

Following the abduction and murder of *Sarah Payne* in 2000, the need for an effective and professional voluntary search organisation was identified and Lowland Search and Rescue was formed (PoSA 4, RESA 1, SAR 1). Lowland Search and Rescue (now known as Lowland Rescue) is a national organisation with 35 regional teams and nearly 1700 members. They work under the auspices of the police and they are called upon in the search for missing persons. They are on call 24/7.

3.4.4 Techniques and procedures employed for this research – an overview

3.4.4.1 Interviews

Of all the interviews conducted, a number were identified as ‘key interviews’; either due to the rank or extensive experience of the interviewees. From these interviews, key themes emerged through data-driven coding and these were identified in NVivo (Bazeley and Jackson, 2013; QRS International, no date) and subsequent interviews were coded under those themes. If another theme that was deemed relevant, emerged from the other interviews it would be given its own theme.

The themes identified were:

- Fault lines
- Winthroping
- Lowland SAR

- Tracking
- BDS
- Suspicious Misper
- Homicide
- Training

3.4.4.1.1 The use of (semi-structured) interviews

An interview is a managed verbal exchange (Gillham, 2010; Ritchie, 2003) and is dependent upon the interviewer's communication skills (Clough and Nutbrown, 2007), clearly structured questions (Cohen et al 2007), attentive listening skills and encouraging free flow communication to enable the interviewees to make it easy to respond (Clough and Nutbrown, 2007). Trust between interviewee and interviewer and a safe environment are paramount. The approach to the interviews for this research was based on a hermeneutic phenomenological approach as described by Kafle (2011).

A semi-structured interview lies between a structured interview (only yes/no answers are possible) and an unstructured interview (where the interviewee is in complete control of the interview). A semi-structured interview is an in-depth interview where the interviewer and interviewee are equal partners. The interviewer is expected to have subject knowledge, in this case, the researcher undertook specific search training with the police and lowland search and rescue organisations to achieve this. It is characterised by a pre-prepared, non-standardised set of questions, but is flexible in being able to explore areas in more depth and then coming back to the original topic. The aim of the interview is to gather data on expert knowledge, facts, opinions, and perceptions of the subject matter (Harrell and Bradley, 2009). Examples of some questions can be found in Appendix D.

3.4.4.1.2 Design of semi-structured interviews

The interviews were designed to take place in an environment in which the interviewee felt safe and comfortable, where anonymity (where required) was assured and which would enable rich data gathering for future data mining. Most interviews were preceded by a telephone or email conversation, before

proceeding to a face to face and recorded on one or two recording devices. This allowed for free flow and two-way communication. There was a fixed set of questions, which was used as a guideline, so that additional questions could be asked where required and sometimes were varied depending upon the expertise of the interviewee (see Appendix D). The interviews were designed to allow discussion and exchange of information to take place. Interview questions were also guided by the past experience of the interviewee, for instance, relevant military expertise. Ethnographic data was gathered and are presented in Appendix E.

3.4.4.1.3 Types of questions

Closed questions (also known as saturated type questions) are questions which can only be answered with 'yes' or 'no'. Open-ended questions (also known as infinite response or unsaturated questions) are aimed at soliciting responses which will lead to more material than a simple yes/no response. Semi-structured open questions were used to elicit the most response possible from the interviewees, whilst respecting confidentiality & anonymity (Newton, 2010). A combination of closed and semi-structured questions was used to lead from simple (closed) questions to more open questions for deeper answers and discussion, which required trust between respondent and researcher. See Appendix D for sample questions.

3.4.4.1.4 Approach

In the beginning, after an initial literature search, it became clear that there is a dearth of available literature on winthroping/reference point search available. An alternative approach was required and so the idea of interviews with practitioners was born. However, initial approaches to people who might be expected to be familiar with the subject were mainly rejected as people were unwilling to talk about winthroping due to its sensitivity in terms of security classification. Winthroping was classified until relatively recently and there is some uncertainty about what is and what is not restricted or classified. Winthroping continues to be utilised on a daily basis by a variety of people, mainly in the fields of counter-insurgency and counter terrorism both at home and in theatre.

Some discussions with people in the field followed, in which the difficulties in obtaining information was discussed. It was suggested that informal discussions with practitioners, current and retired, totally anonymous, in which they were completely free to discuss as much or as little as they were comfortable with, was the best way forward. After some deliberation, it seemed best to gain as much background knowledge first and to discuss that knowledge so that the interviewees would feel comfortable the interviewer already had some knowledge and understanding of the topic. Therefore, the interviewer undertook search training, including training in winthopping, to acquire some background knowledge of search and search techniques.

3.4.4.1.5 Finding sources

The next step was to find practitioners, both active and retired, who would be happy to discuss reference point search and search in general for this thesis. Judgment, purposive, snowballing & opportunistic sampling were all used as described below (Harrell and Bradley, 2009). Through utilising personal contacts, asking for introductions, doing a lot of background research on people and occasionally just 'bumping into someone' at a relevant place such as the Counter-Terrorism Symposia (CTX) in London, attending a Defence & Security or Doctoral Symposium at The Defence Academy in Shrivenham (2015, 2016 and 2017) or whilst observing a CT search operation (April 2016), enough participants were secured for these informal discussions. Most were happy to discuss reference point search and as the discussions progressed a deeper understanding of reference point search was procured and the discussions could become more in-depth.

The discussions took place either in person at a location convenient to the participant, over the telephone or via cyberspace through specially created email accounts. Total anonymity was assured if required. In those cases, the interviewees are only identified by their professional expertise and a number (i.e. PolSA1). There were closed questions to start the discussion with, followed by semi-structured, open questions to allow for free flow discussion. The questions were also used to provide a focus if this was necessary. All participants were

happy to be contacted again to verify, clarify or expand certain points of view. Most interviews were recorded.

3.4.4.1.6 Verifying sources

All sources were verified prior to interview through a variety of means including job verification, introduction or verification by a trusted source, checking experience as well as public and professional profiles.

3.4.4.1.7 Limitations within this approach

It is time-consuming and expensive to identify, track down and verify potential sources, arrange a mutually convenient time to meet at a venue of their choice, travel time (between 1-8 hours travel time per interview was usual) and subsequently transcribing the interviews. Each hour of an interview would require up to 7 hours of transcribing, which in itself is an intense process. Some people chose to meet in a public place, which made background noise a problem whilst transcribing. This required subsequent additional work before transcribing was possible. An additional challenge arose when people turned out not to have any practical experience of reference point search in the context of this research, despite prior discussion; the interview would still proceed but would be of limited value. The interviewees were all people who were willing to be interviewed and therefore a self-selective group and not necessarily a representative reflection of their peers.

Using both purposive sampling, judgment, snowballing and opportunistic sampling to find interviewees, led to the issue of saturation, the point at which no more new issues arise from the interviews. Snowballing was used as introductions to other people in the field were difficult to obtain by other means, due to the sensitivity of the subject matter. This way appropriate introductions were received and people were more likely to be willing to be interviewed. As the interviewing approach was to identify key interviewees within the cohort of search professionals interviewed, whose interviews were transcribed first and then coded to discover significant themes, subsequent interviews were coded to these themes. Upon manually checking the key interviewees did have broadly similar themes to the other interviewees. Considering over 50 people were interviewed,

all of whom were search professionals, and considering the recurrence of similar themes, it was felt that for this initial exploration of the use of winthroping and other search approaches in the location of rural body deposition sites, this was enough. Of course, there were many other people that could have been interviewed, but there were also time restraints in place.

3.4.4.1.8 Analysis of interviews

NVivo was identified as the appropriate thematic framework method to help analyse this qualitative interview material and conduct the critical literature review (Bazeley and Jackson, 2013; Bazeley, 2013) and subsequently two self-funded courses were undertaken with QRS International; 'Fundamentals of NVivo' and 'Moving on with NVivo' in Spring 2017 (see Appendix B), followed by free online video tutorials provided by La Trobe University in Australia and QSR International (QRS International, no date) (La Trobe University, 2014). Due to a lack of previous experience with NVivo, a lot of time was given over to undertaking these courses and self-directed training.

The advantages of using NVivo were:

- Ability to import bibliographic data from Mendeley Reference Manager and other sources such as audio files
- NVivo will help find patterns and themes within a variety of sources of information, which can then be organised into groups and categories
- This information can always be linked back to the original imported source of information
- It allows the researcher to see all the information belonging to one theme at once, making retrieval easier
- It is possible to ascertain how much information one has for any one topic, section or theme
- It enables discovery of relationships within sources of information
- It allows the creation of visual models to represent ideas and findings

- NVivo provides a very structured framework to conduct a systematic literature review (Garcia, 2015b)

Interviews were transcribed using a special transcription programme, entered into NVivo, coded and emergent themes noted.

3.4.4.2 Training

3.4.4.2.1 Approach

Initially, contact was made with a representative of a search and rescue group, who suggested that some training with UKLSI could be undertaken in order to understand the training and give an opportunity for networking. UKLSI agreed to training course attendance. Invariably this meant all the other attendees were part of a search and rescue team, which sometimes led to some disapproval and criticism of the researcher's attendance. In contrast, the UKLSI staff (all volunteers) were very supportive.

Attending the PoISA course, normally only attended by experienced search-licensed police officers, was made possible through the kind and generous support of Superintendent Tony Ismay, the now-retired lead of the Police National Search Centre. Contact was made with Superintendent Ismay whilst he was a guest speaker at an ALSAR national training workshop. Further training was undertaken as more contacts were made with both individuals and organisations. All this depended heavily upon networking and the fact training had already been undertaken.

3.4.4.2.2 Continuing training

As part of the research a number of conferences, symposia, CPD events, and national ALSAR training workshops were attended in order to learn, network, take part in academic competitions to present my research and stay up to date with current trends. These were self-funded and normally involved a few days at the time. Appendix F lists all events attended.

3.4.4.2.3 Experience

In order to consolidate the training undertaken several training events with lowland SAR were attended. These involved practical outdoor search exercises with Sussex SAR, Kent NSARDA, Sussex NSARDA, and Wiltshire SAR, as well as indoor training with Sussex and Wiltshire SAR over the period of a year.

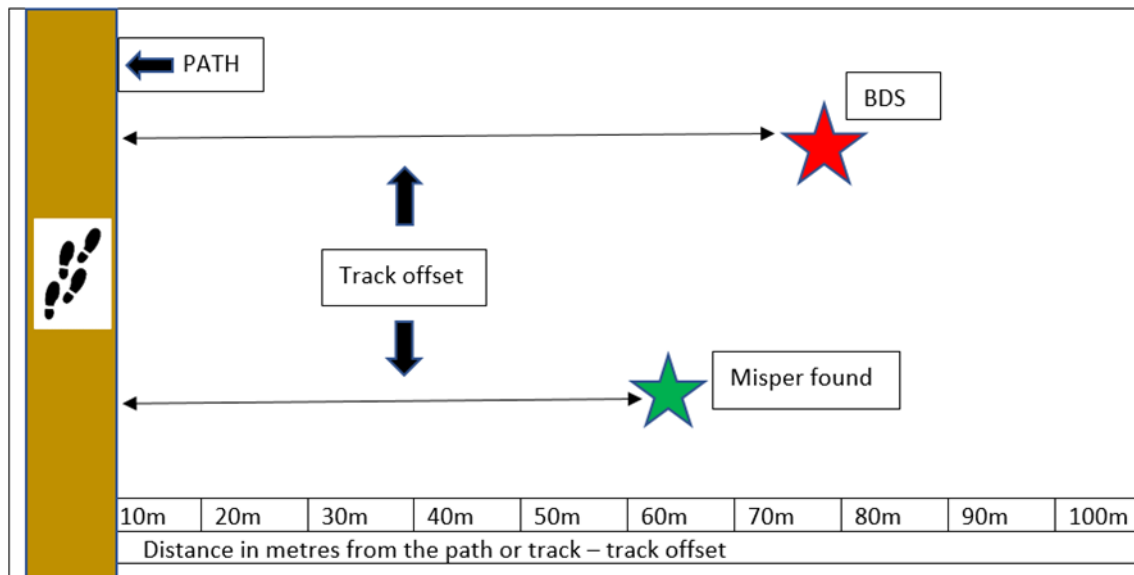
3.4.4.2.4 Qualifications

The courses and workshops attended and all relevant qualifications gained during this research are listed in Appendix B.

3.4.4.3 Quantitative research

Quantitative research was undertaken as a systematic empirical investigation of observable phenomena (Badewi, 2013). Secondary data were used as there are ethical and legal restrictions regarding obtaining first-hand data from body deposition sites. Rather than repeating earlier experiments to establish potential distance data (Humphrey, 2010; Forrest, 2013; Buxton, 2017) actual distance data from body deposition sites were used. These were obtained from the CATCHEM database and the MPB. This data was compared to track offset data from KSAR as is currently being collated by KStat (Anon., 2018) in a live online database. Further track offset data was obtained with kind permission from the Lowland Rescue (formerly ALSAR) database AIR. Track offset distance is the distance from a path/road to the point where the BDS or Misper is found. Below in figure 3-4 is a schematic representation of track offset data.

Figure 3-4 Track offset distance defined (not to scale)



3.5 Limitations

Training in qualitative methods, interview processes, data collection, and transcribing and coding processes, as well as software training is essential in order to use qualitative data effectively. This had not been sufficiently anticipated beforehand and retrospectively shorter interviews may have been better suited. Yet, this has to be balanced against the time taken to build up trust and rapport, and for the interviewee to feel free to go (slightly) 'off subject', which was how the theme of 'fault lines' emerged. Semi-structured questions can provide a potentially rich source of raw data, which can be mined over time if consent allows.

4 SEARCH

4.1 Search Defined

The word 'search' comes from the Latin *circare* meaning 'to go around/about' and the old French *cerchier*. Search has different definitions depending upon the context.

Collins Dictionary states that search is:

1} *(verb) if you search for something, you look for it in several places*

2} *someone is being examined to see if they are hiding anything*

3} *(noun) An attempt to find something*

Whereas Chambers Dictionary describes search as:

To explore all over in trying to find something, to examine closely, to ransack, to scrutinise, to probe, to seek, to look for, to hunt, a quest.

Within the police, search is defined as:

“The capability to LOCATE, specified TARGETS, using INTELLIGENCE assessments, SYSTEMATIC PROCEDURES, and appropriate detection TECHNIQUES”

(Policing, 2015) (Based on the RESA definition of search, pers comm 2018)

In the context of the search for missing people search is defined as follows:

An operation using available personnel and facilities to locate persons in distress
(NASAR, 2005)

In the *Department of Defence Dictionary of Military and Associated Terms* (2018) in America search is described as:

Search — A systematic reconnaissance of a defined area, so that all parts of the area have passed within visibility (JP 3-50)

4.2 The Police and Search

Search is an important part of modern policing. Most people are familiar with 'stop and search' and crime scene search, but there are other important searches the police undertake, such as counter-terrorism search of buildings, areas, vehicles, trains, planes, arenas and routes, missing person search, offensive, and defensive searches, wanted person search, preventative search and searching for a body deposition site.

There are varying levels of search levels within the police. The levels of search skills are illustrated in the 'search triangle' below in figure 4-1.

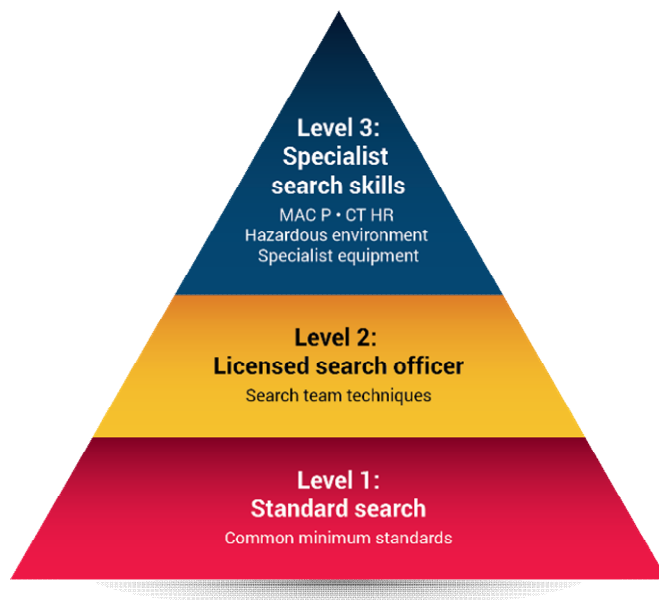


Figure 4-1 The Police search triangle (after Search Skills Pyramid in Policing, 2015)

This illustrates that all police officers receive standard search training, some of it online. Specially selected and trained officers may go on to Level 2 to become Licensed Search Officers (LSOs) with a high level of confidence in search ability.

Level 3 searches use specialist high assurance search skills such as used by military experts to assist the Civil Power (MACP), for counterterrorism high risk (CT HR) situations and when specialist equipment is required. Level 3 search is used for full route, vessel and aircraft searches and in hazardous environments.

Search is used to detect evidence such as drugs, weapons, methods of attack (MOA) including explosives or the components of Improvised Explosive Devices (IEDs). Search is utilised to find lost or missing people, wanted criminals and missing/stolen items, to prevent crime, deprive criminals of resources, combat terrorism, search premises and routes to make them safe for visiting dignitaries. This is by no means an exhaustive list. Police powers in relation to search are covered by various laws and guidelines including the Police and Criminal Evidence Act (Great Britain, Police and Criminal Evidence Act 1984, Elizabeth II), Criminal Justice and Public Order Act (Great Britain, Criminal Justice and Public Order Act 1994, Elizabeth II) and the Terrorism Act (Great Britain, Terrorism Act 2000, Elizabeth II).

4.3 The Police and Homicide Investigations

The police have several priorities when investigating a homicide; ranging from establishing whether a homicide has, in fact, taken place (Regulator and Reports, 2015), confirming the identity of the victim, securing evidence from the crime scene(s), finding and interviewing suspects and witnesses and helping to secure a conviction (see also table 4-1 below).

PRESERVATION OF LIFE		PRESERVE SCENES
SECURE EVIDENCE	IDENTIFY VICTIM(S)	IDENTIFY SUSPECT(S)

Table 4-1 The five building blocks principle (after NCPE, 2006, cf Brookman, 2005)

These investigations may be complicated by communication difficulties between forces and other agencies, if there are different scenes across county borders involved (SIO 3, see also Keppel and Weis, 1994 for a discussion on this).

The police have dedicated units to deal with serious crime, often called serious crime directorates, who will investigate homicides. There will be a Senior Investigating Officer (SIO) and a large team around the SIO as illustrated in figure 4.2.

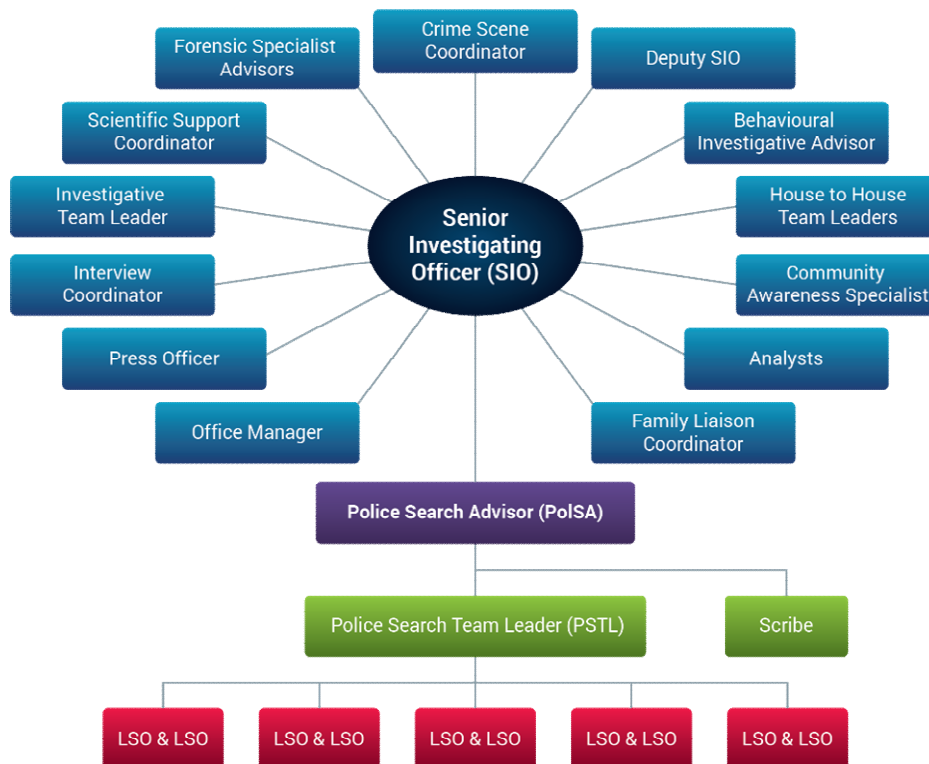


Figure 4-2 Homicide Management Team (cf Brookman 2005)

This team will be made up of four distinct groups {the SIO, Major Incident Room (MIR), Outside Enquiry Team (OET) and Forensic Support} and the SIO will take on a managerial role. The SIO will also have access to external specialists or SMEs such as a forensic archaeologist, behavioural analyst or geographical profiler and the National Search Advisor (NSA) (Brookman, 2005) (Detective 1).

Links between the victim, the offender, and the location are examined and investigated in order to secure evidence. This is illustrated in figure 4-3 below.

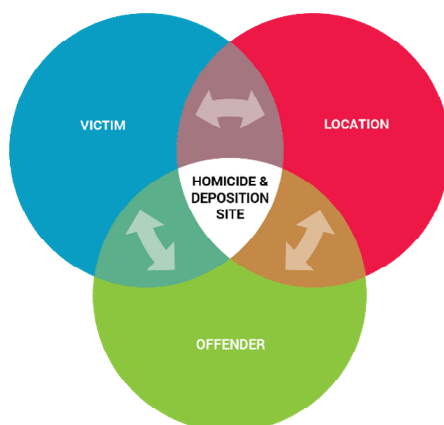


Figure 4-3 Links between the victim, offender, and location

Ultimately the victim & the offender must have been at the same location at the same time (unless it was murder by a remotely controlled device or delayed action poison); this location may or may not also be the deposition site.

The SIO will normally liaise with a PoISA on matters relating to search, but the SIO can (and on occasion does) ignore the PoISA's advice (PoISAs 1, 3, 4, 5, 6, 7, 11). It is crucial that accurate documentation is maintained throughout as often this is relied upon in court. This also applies to matters relating to search. In protracted and complicated cases, a search cell is often established as is illustrated below in figure 4-4. This allows the PoISA to ensure accurate and comprehensive records are kept and the search will stand up to scrutiny.



Figure 4-4 Search cell structure (after Policing, 2015)

The PoISA Manual (Policing, 2015) gives ready-made forms to use during different searches, but these are in addition to, rather than a replacement of the forms used under the Police and Criminal Evidence Act (Great Britain, Police and Criminal Act 1984, Elizabeth II).

4.4 The Police and missing people

“Not all those who wander are lost” – Tolkien (1954)

“All this time I was finding myself and I didn’t know I was lost” – Avicii (2013)

The police spend a lot of time searching for missing people (mispers). Around 140,000 people per annum are reported missing (Detective 1), accounting for about 314,000 missing persons incidents (Eales 2016), although approximately 95% are located or return within 48 hours. This discrepancy between incidents and missing persons is explained by the fact there are people who go missing

repeatedly. Each incident is recorded, if it has been reported, leading to an increased number of incidents. To reduce the workload of the police, several attempts over the years have been made to define risk in relation to missing people (ACPO, 2005; ACPO, 2006; HWG, 2010). Currently, there are 2 main categories of missing people:

- 1} **Absent** - “A person not at a place where they are expected or required to be.”
- 2} **Missing** - “Anyone whose whereabouts cannot be established and where the circumstances are out of character or the context suggests the person may be subject of crime or at risk of harm to themselves or another.” (ACPO, 2013)

In contrast, the PolSA manual (Policing, 2015) lists 4 categories:

Lost person – Person who is temporarily disorientated and wishes to be found (lost walkers for instance)

Missing persons who have gone missing voluntarily – a person who has control over their actions and have decided they wish to leave home

Missing persons who are ill or injured – A person who does not wish to be missing, but has suffered injury or illness, which has resulted in not being able to complete a journey and are reported missing

Missing persons under the influence of a third party – A person who has gone missing against their will, for instance, they may have been abducted or are a homicide victim (this category may also be referred to as ‘suspicious misper’).

It is worth noting there is a further category where someone is reported missing but has no idea they are classed as missing; a teenager who has gone for a long walk to cool off after an argument with her family, an elderly man with dementia who has gone to bridge club, but forgot to tell his carer, a father who has gone to a club, got really drunk, slept it off somewhere and eventually makes it home the next day, whilst in the meantime teams of searchers have been out all night in the pouring rain trying to locate him (the latter is known as a ‘bastard search’).

The risk for people in the ‘missing’ category is further defined into 3 levels:

1} **Low risk** - *there is no apparent threat of danger to either the subject or the public;*

2} **Medium risk** — *the risk posed is likely to place the subject in danger or they are a threat to themselves or others;*

3} **High risk** — *the risk posed is immediate and there are substantial grounds for believing that the subject is in danger through their own vulnerability or mental state or the risk posed is immediate and there are substantial grounds for believing that the public is in danger through the subject's mental state*

(Tarling and Burrows, 2003) (Policing, 2015)

This allows for appropriate allocation of scarce resources especially as it is estimated that a missing person's search costs approximately £1325–£2415, (Shalev Greene, 2012), though some high profile cases far exceeded this; *Madeleine McCann* estimated at £10 million+ to date (BBC, 2015a) and *Shannon Matthews* £2,659,000 - £3.2 million (The Guardian, 2008).

The correct categorisation is of the utmost importance for resource allocation; including immediate deployment of police officers, senior management involvement, media strategy, lines of inquiry and liaison with outside agencies (Policing, 2015). Missing person inquiries can and do escalate into a critical incident where *“the effectiveness of the police response is likely to have a significant impact on the confidence of the victim and/or the victim's family and/or community.”* (HWG, 2010). This will require careful 'Critical Incident Management', the guidelines for which can be found at <http://library.college.police.uk/docs/NPIA/Practice-Advice-on-CIM-Jul2011.pdf>. A specialised database (Centralised Analytical Team Collating Homicide Expertise and Management - CATCHEM) from Crime Operational Support (COS) at the National Crime Agency (NCA) may be utilised to provide lines of inquiry in those cases of suspicious missing person investigations (COS/CATCHEM, 2007).

4.4.1 Police search for missing people

Depending upon the category of risk a missing person is allocated, the police will either monitor or actively search for the missing person. Where it is deemed that there is a low risk, a case may just be monitored and the loved ones given advice, such as to contact the charity Missing People (Missing People, 2018). If a missing person is considered to be at high risk, then more resources are directed towards locating the person. The highest level of response is typically reserved for the most vulnerable people; people with dementia, children, autistic people, and despondents. Any person whom it is suspected may be under the influence of a third party and/or may have come to harm will trigger a high level of response as well. If the search for a missing person is thought to be suspicious other specialist agencies may become involved such as the Police National Search Centre (PNSC), National Search Advisor (NSA) and the National Crime Agency's (NCA) Missing Persons Bureau (MPB). Other specialists such as geographical profilers, forensic psychologists, forensic archaeologists, specialist searchers, and forensic geologists may also be asked for advice and input. Outside agencies such as Lowland Search and Rescue (SAR) and mountain rescue teams may be called in to aid the search of high risk vulnerable missing people.

In the past, senior police officers have had to resign following the mismanagement of missing people cases, such as Ian Oliver of Grampian Police (BBC, 1998). Therefore, a more standardised approach is now in place. The search decision-making loop on the following page illustrates this well (figure 4-5).

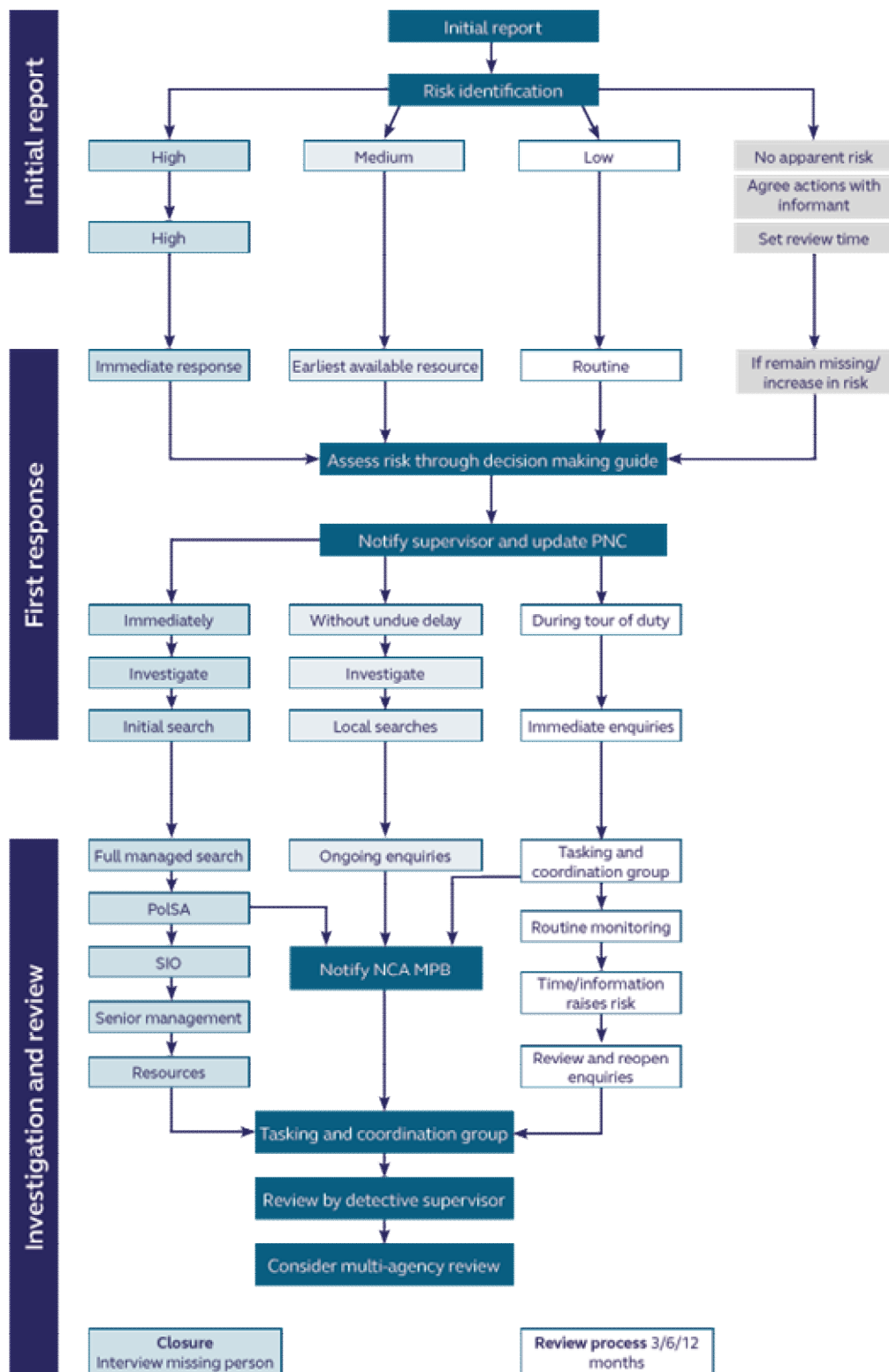


Figure 4-5 Missing persons decision cycle (Policing, 2018)

4.4.2 Missing people and homicides

More than 140,000 people go missing every year in the UK, though most either return home or are located within 48 hours. This is not the same as missing episodes as some people will go missing repeatedly. After one year only 1% of the original missing cases remain outstanding (Detective 1). It is estimated that 0.3% of all missing people will be found dead (Newiss, 1999, 2004b, 2006). In a study for the charity Missing People, Newiss (2011) identified that 8% of long term missing people who were subsequently found dead, were the victims of homicide. The overall risk of a missing person being found dead is 1:165 (Newiss, 2006). It is important to note that there are some significant variations between males and females and age ranges. See reports by Geoff Newiss (Newiss, 1999, 2004a, 2006) for a discussion on this. However, as stated before this does not include those victims who are missing from the statistics.

Most 'no body' murders start off as a missing person case (FP 1, PolSA 4, Detective 1); for example missing persons *April Jones* (2012), *Tia Sharp* (2012), *Jayden Parkinson* (2013), *Alice Gross* (2014), *Becky Watts* (2015), *Lucy McHugh* (2018) and *Sam Eastwood* (2018), which is then either escalated to a homicide investigation due to received intelligence or evidence such as blood loss incompatible with life found at home address or last known place (*Mariola Cudworth* 2015). A major incident may also be raised after the body of a missing person is found and the death is thought to be suspicious (*Alesha MacPhail* 2018).

It is important to note again that the vast majority of missing people do not end up dead or murdered and most missing people return of their own accord or are found by either the police, family, friends or Lowland Search and Rescue teams. However, the cases where a missing person enquiry turns into a homicide investigation can present the investigating officer (IO) or SIO with major challenges, especially if the body has yet to be found. The body deposition site will not only contain (parts of) the body but also potentially important forensic evidence and may link an offender to the victim (as illustrated in figure 4-3 above).

Another aspect is that not all missing persons nor homicides are detected. In order to be classed as missing, someone has to report the person to the police as missing. This means that someone must actually either be missing the person or that their absence is noted (for instance through missed appointments). Someone may become a homicide victim after disappearing of their own accord (Newiss 1999) or be abducted and subsequently killed. If a person is, for instance, homeless, leads a chaotic lifestyle, lives 'off grid', is an illegal immigrant, a trafficked person or a runaway (especially if a repeat runaway in care) or a person who has lost contact with family and friends, they might not be reported missing. These people are the '*missing missing*'. When a person goes missing who is not reported missing, and is subsequently murdered, if their body is not found, they are a 'no body *missing missing* murder victim'. A victim no one knows about.

The '*missing missing*' murder victim often are:

- Not reported missing
- Not missed by anyone in the UK
- Homicides missed at the initial scene or at post mortem
- Body (parts) found, but not identified

The '*missing missing*' are important as the information shows that databases only capture certain data, yet miss out a whole group of people. If it were possible to capture this data or at least take in to account statistical information is based on incomplete data, a deeper understanding of homicide trends would be achieved.

Within the UK the Missing Persons Unit or Missing Persons Bureau (MPU or MPB) (under auspices of the NCA) holds records not only of long-term missing people but also of hundreds of unidentified bodies and body parts (Missing Persons Unit, 2018). These are the found, though unidentified, missing, a number of whom have been the victims of homicide. See also Alder and Polk (2001), Brookman (2005), Canter (2007) and Edkins (2011) for discussions on this.

Detective 1 points out that another group of missing people is missing from the missing list; namely where a crime has superseded the 'missing' status for

instance when someone is reported missing, turns out to have been abducted, raped and murdered. They are then no longer recorded as having been missing, but instead, it has become a homicide investigation. This means that potential rich data is missing from databases and its exclusion may have consequences for subsequent analyses.

There is another group of ‘missing’ victims, those people who are (initially) wrongly classified as accidental deaths, death by natural causes and suicides. A report commissioned by the Forensic Pathology Unit at the Home Office (Home Office, 2015) found that of 33 cases, originally examined by non-forensic pathologists, and re-examined by forensic pathologists, 15 should have been treated as suspicious deaths from the outset, with 10 being classified as a homicide. The report suggests it is cognitive bias at the initial scene of an unexpected death, especially when the person was elderly, drugs or alcohol were involved, rather than lack of police resources, that is responsible for these oversights. A full assessment at the initial scene of unexpected death may have prevented the oversight of suspicious cases and ensured that forensic evidence from both the body and the scene would have been preserved.

4.4.3 Body deposition sites

Geographical locations may feature significantly in a homicide investigation (ACPO, 2005; COS/CATCHEM 2007) as shown in figure 4-6, both in terms of locations and routes.

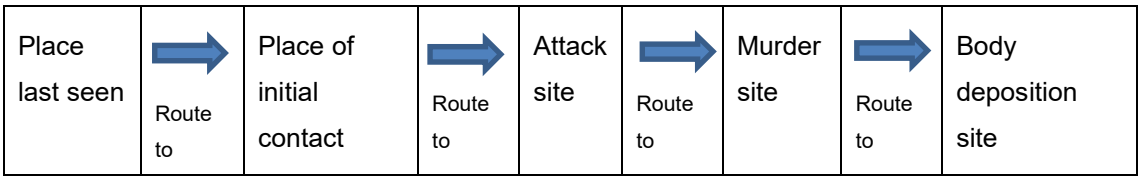


Figure 4-6 Significant scenes in a homicide investigation

Body deposition sites should not be confused with graves, but rather refer to the site where a body is deposited, be it surface deposition, concealed or clandestine burial. The presence of a body presents the perpetrator with the need to get rid of the evidence and the body. Some bodies are left *in situ*, but regularly the perpetrator will attempt to conceal the body *ex situ* (Keppel and Weis, 1994;

COS/CATCHEM, 2007). This may include simply ‘dumping’ the body at the side of a road, concealing it under some bushes, digging a (shallow) grave or more elaborate endeavours. How and where a body is disposed of will vary hugely depending upon the size and strength of the perpetrator and size and weight of the victim, available resources, whether the homicide was planned in advance, time of day, pressures such as expected concern for the victim from family, friends or the police and the familiarity with the deposition site. A BDS is normally in an area familiar to the offender (FAs 1 and 2, PolSAs 1, 4, 5, 6, 7, 8, 9, 10, 11, SA 2, RESA 1, SS 3, SIO 3, CC 1).

Prolific American serial killer Ted Bundy, for instance, confided to FBI Special Agent William Hagmaier that; “...*{the victim} becomes part of you, and you {two} are forever one...and the grounds where you kill them or leave them become sacred to you, and you will always be drawn back to them.*” It was also noted that Bundy was a “*meticulous researcher*”, “*who explored his surroundings in minute detail, looking for safe sites to seize and dispose of victims.*” (Nelson, 1994).

‘Green River’ killer Gary Ridgeway followed a not dissimilar pattern: *‘The bodies were then dumped in the wilderness, usually nude and sometimes posed. He had a habit of dumping them in "clusters" in different locations over a period of time, usually near some nearby landmark or in the water. He would return to the bodies to watch them decompose...’* (Database, 2015).

It is generally accepted that BDS will have the following key features:

- Principle of least effort
- Familiar location with clear features or reference points
- Concealment

Below are two examples of body deposition sites; both offenders were familiar with their BDS site, and used concealment (figures 4-7 and 4-8).



Figure 4-7 Alice Gross BDS - © Tanja Conway-Grim 2017



Figure 4-8 Paige Doherty BDS © BBC (BBC, 2016)

4.4.4 The Police and Lowland Search and Rescue teams

The police may call upon a local lowland SAR team to help with searching for high risk vulnerable missing people such as missing children, people with dementia, despondents and people suffering from mental health issues (SAR 1, 2, and 4)). The SAR team may also be called upon in the search of a 'suspicious missing person' when a crime is suspected to have taken place and occasionally SAR teams are tasked with retrieving a body from a difficult location (SAR 1 & 2). Lowland SAR teams are highly trained professional volunteers who are on call 24/7 and work under the direct primacy of the police (figure 4-9). They are the



less well-known 'cousins' of the much-loved and well-known mountain rescue teams (MRT).

Some police forces have a Memorandum of Understanding (MoU) with their local SAR teams and will pass on their missing

Figure 4-10 SAR hierarchy and lines of communication

people searches to their local SAR team. The police do not fund their local SAR team but may offer local SAR teams the use of some of their facilities for storage and training (SAR 2). They may also regularly train together and at times there will be a multi-agency training event, where police, SAR, Fire, and Rescue Service (FRS), Neighbourhood Watch (NHW) and the ambulance service will practise scenarios.



Figure 4-9 Hellenic SAR team working alongside UK Police in Kos © South Yorkshire Police 2017

During the recent search (2017) for long term missing toddler Ben Needham in Kos, the specialist police search teams worked in conjunction with the Hellenic search and rescue team in Kos (pers comm FA1 and PoISA 8), who provided expert local knowledge and people power (figure 4-10).

4.5 Reference points and body deposition sites

Winthropping, reference point search and feature focus point search are all terms to describe a method of searching which relies on 'reading' a landscape and anticipating how a person might use a landscape to hide something in. Winthropping was developed in Northern Ireland by Lt Winthrop of the British Army to find weapons caches made by the Provisional IRA in the 1970s. The method was initially named after Lt Winthrop, though following a request from his family, the name winthropping was dropped and replaced by reference point search and more recently in some situations as feature focus point search (Donnelly and Harrison, 2017).

Dr. John Wyatt (2017) describes it as follows:

"The appreciation of this from a terrorist's point of view was first carried out by a young Lieutenant in the Royal Regiment of Fusiliers (RRF) in 1974. Because searches in rural areas had brought little success, Lt Winthrop decided to look at the problem in another way. Instead of stringing his men out in a long line to sweep a field or woods, as the police might to gather forensic evidence, he would stand at a vantage point and survey the countryside. He would note the objects, lie of the land that could be used as reference points especially at night and set his team to search those areas within 20 metres or so. The success rate shot up. He and his platoon alone found 24 terrorist weapons, 4,420 rounds of ammunition, 37 detonators, 1600ft of Cordtex, telescopic sights, radios and explosives in a total of 63 hides. This was a huge breakthrough and his methods were immediately included in the training. The term 'Winthropping' became common as it could be used in any sort of open area including parks, gardens and common ground."

A reference point will usually have the following characteristics:

- Permanent
- Prominent
- Not too artificial



Examples include a gap in a hedge, corner or end of fencing or wall, distinctive tree in a field or a single tree in a hedgerow, figure 4-11 gives an example of a distinctive feature.

Figure 4-11 Distinctive tree in field © Tanja Conway-Grim 2017

Donnelly and Harrison (2017) described it as a method that is based on the premise that physical, geological or geomorphological features within a landscape can aid an offender to locate a grave or relocate a burial. This might enable an offender to locate a grave or retrieve buried items by the recognition of distinct “primary”, “secondary” and “tertiary” primary reference point markers. The technique is taught to this day to soldiers and at a higher level to Royal Engineers Search Advisors (RESAs) and Royal Engineer Search Teams (RESTs). PoISAs and LSOs will be exposed to its principles during their initial training and commercial companies involved in counter-terrorism operations and preventative strategies around the world teach and apply the principles.

It was noted by a number of PoISAs over the years that certain rural body deposition sites seemed to be located nearby or adjacent to reference points (FA 1) and it is certainly known that in the case of the 1960s ‘Moors Murders’, Brady and Hindley’s victims were buried in such a manner that they could navigate their way back to the graves using reference points. Photos that Brady and Hindley took were used by the police to identify landmarks and search for the graves (Topping, 1989). Reference points may be an important feature in the search and location of body deposition sites. This is further explored in Chapters 5 and 6.

4.6 Summary

This chapter looked at some of the aspects of search, search techniques and search approaches in the UK amongst some of the organisations involved in both

the search for missing persons and suspicious mispers, as well as the search and location of rural body deposition sites. It is clear that many people go missing each year in the UK, as there are, in fact, worldwide, but only a fraction will still be missing > 12 months. Only a very small percentage of missing people will become a victim of a homicide, though it is the case that most homicide cases start off as a missing person case.

In the next chapter search training that was undertaken for this research will be explored to consider whether winthroping, SAR techniques, and tracking could aid the search and location of rural body deposition sites.

5 TRAINING

5.1 Introduction to training

Professional searching is a highly skilled profession, within which there are several different specialties. Searching does not come naturally to most people and people can confuse looking for keys with searching for keys. Effective search techniques are an acquired skill and therefore need to be taught, normally in a systematic way and must also be maintained in order to remain effective. Within the UK there are set standards for search and search training, and that is discussed in this chapter. What follows is a summary of the training undertaken and a brief discussion. A more in-depth discussion follows in the Discussion chapter. Can winthroping, lowland search and rescue techniques, and tracking play a role in the search and location of rural body deposition sites?

5.2 Why training?

In order to understand the depth and breadth of the training of both police and lowland search and rescue organisation, their similarities and differences and ongoing training requirements, training was undertaken with both the College of Policing and the Association of Lowland Search and Rescue. The SAR training sessions took place over several years due to the way the training is delivered. Training was an integral part of the research and a pragmatic inductive approach was used (see also table 3-5).

Training was a crucial part of the research process:

- 1} It allowed networking to take place
- 2} It gave first-hand understanding of the implications of different curricula in a way that would not have been possible any other way
- 3} It gave credibility when talking with both lowland search, police officers and other search professionals
- 4} It enabled the process of comparing training across the disciplines

5} This pragmatic inductive approach allowed immersion in the material, search techniques and approaches of the search world

6} The pragmatic inductive approach also allowed an understanding of the 'search culture' and thereby enhanced networking, credibility and sharing of good practice

5.3 Police search training

In the UK it is the statutory responsibility of the police to investigate when a person is reported missing (Perkins, Roberts, and Hope in Greene and Alys, 2017). All police officers are trained in search awareness Level 1 Standard Search (Policing, 2015) as part of the Police Search Learning Programme (PSLP), which is a standardised learning programme. A police search is normally delivered by Licensed Search Officers (LSO) as part of a police search team (PST) under the direction of a Police Search Advisor (PoISA). The PoISA advises the SIO on all aspects of search.

Open area search and winthroping or reference point search are taught as part of the counter-terrorism part of the initial PoISA course as its origins are in CT search in Northern Ireland. However, its principles are now also applied to crime search (for instance searching for weapons caches in gang-related crimes in inner-city areas). In an area search the searchers are normally looking for hides used by terrorists to conceal their weapons/explosives. These hide locations will normally have identifiable criteria and these could be used to map the needs of lowland rescue for the search and location of rural body deposition sites against the fundamental drivers for terrorist caching. These criteria are known as CANAL:

C – Concealment and camouflage

A – Available for immediate use

N – Non-attributable

A – Accessible

L – Locatable by day or night

(Policing, 2015)

Recently ALSAR has started collaborating with the police on the development of missing person component of the PoISA training course and is thus involved at a local, regional and national level (SAR 1 and PoISA 8).

5.4 Lowland search training

Lowland search training is self-funded and undertaken as a series of residential weekend courses over the course of several years. It is a modular system and aspiring searchers will undergo a 12 months probationary period with their local

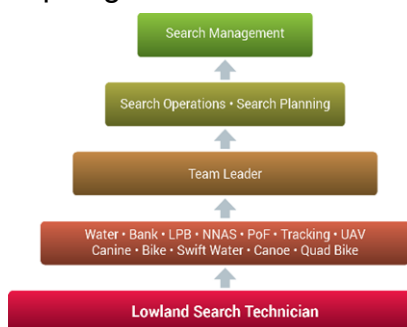


Figure 5-1 Building blocks of SAR training

team, including participating in local training and simulated searches, whilst also attending national search training with UKLSI. All lowland search and rescue searchers are volunteers, on call 24/7. The main lowland search techniques are listed below, whilst figure 5-1 illustrates the building blocks for Lowland Rescue training.

Search planners and managers will also undertake SARMan training, a dedicated computer programme to help with search planning. SAR uses a unique method of search planning called the bike wheel (see Appendix C).

Lowland Search Techniques

Hasty search - Initial response to search; a fast, initial look at high priority routes, paths, tracks, and specific areas. Characterised by its speed the hasty search may provide fast finds but also gives immediate reassurance to misper's family that something is being done and provides the Search Management Team (SMT) with valuable feedback on the search area. A hasty search often takes place in the immediate area of the Rendez Vous Point (RVP), as, for instance, 25 % of missing despondents are found within 30 metres of a path (Koester, 2008). It may lead to a very quick conclusion of a search.

Route and path search - Search of a route, path or track. Part of a *hasty search*, though can also be the start of Efficient Sector Search. Searchers will quickly

move along the route and path (R&P) searching either side of the track. Whilst traditionally defined as “up to 5 metres either side” modern thinking allows the Team Leader (TL) greater flexibility to search potential areas whilst maintaining the pace of the search. The team leader will normally remain on the path whilst the searchers will go off the path to search for the missing person.

Line search – a search technique that may maximise the Probability of Detection (PoD); along with a shoulder to shoulder search and grid search. Personnel intensive, time-consuming and it destroys clues and tracks. Sometimes this method of searching is used to engage members of the public who want to help in the search for a missing child. The police may put a SAR team in charge of untrained volunteers to do a line search on a nearby football field, for example, thereby keeping them away from the actual search areas whilst the participants believe they are actively helping.

Cubing – is a search technique which is 3 dimensional in its approach. When entering a section to be searched, the searcher looks ahead, left, right, up and down, then turns around and does the same routine. This means that if someone is hiding up a tree or is hanging from a tree, they will be spotted. It also ensures all angles are covered. Furthermore, the searcher will also become familiar with what the area looks like in reverse (which can be crucial when having to retrace one's steps).

Purposeful wandering – This search technique encourages searchers to wander through their allocated area in a non-rigid manner, following natural paths, walking around obstacles such as a fallen tree and searching those areas that may hide a subject or object, i.e. fallen tree or a clump of bushes.

5.5 Tracking

Tracking is as ancient as hunting and is taught to military personnel worldwide and widely utilised by conservation groups, hunters, wildlife photographers, indigenous hunters, border enforcement officials, and others. It is a perishable skill but easily maintained with regular practice. It is not routinely taught to police and lowland search and rescue personnel, though the latter can take the 16 hours

course offered in tracking and the former do have access to a national register of tracking experts, see Chapter 8 for a discussion on this. Figure 5-2 shows a fresh dog walker's boot print in the mud alongside a dog paw print. Figures 5-3 and 5-4 show some 'sign' and track in a wildflower meadow. Black arrows have been used to pinpoint the areas of interest.

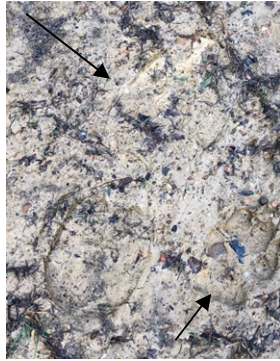


Figure 5-2 Fresh boot print in mud © Tanja Conway-Grim 2018



Figure 5-3 Fresh track in grass © Tanja Conway-Grim 2018



Figure 5-4 Day old track in grass © Tanja Conway-Grim 2018



Figure 5-5 Undisturbed forest edge © Tanja Conway-Grim 2018



Figure 5-6 Disturbed forest edge © Tanja Conway-Grim 2018

As figures 5-5 and 5-6 above indicate, being able to see where there has been a disturbance in vegetation means that searchers/team leaders can make an informed search decision on whether to search a particular area. In the end, everything is searched, but areas with a high probability of containing the missing person/evidence/body will be searched first to optimise the chance of finding the target, as searchers and trackers are at their best when freshest. A recent case

involving a young person running away from home to commit suicide describes the importance of attention to detail in vegetation disturbance and how easy it is to miss it (*Amber Peat* enquiry, BBC, 2019).

5.6 Summary

Training is an important part of the ability to search and all organisations involved in the search, whether it is for missing persons, evidence or bodies, take their training responsibilities very seriously. National standards and rigorous adherence to those standards mean that search training in the UK for the Police, Lowland Rescue, and trackers, is of a high standard, as evidenced in their deployment nationally and internationally. Table 5-1 below shows some of the requirements and differences between PoISA, Lowland Rescue and tracking, highlighting differences and opportunities for improvement, which are further explored in the discussion chapter. The tracking training is descriptive for both military pursuit tracking training (PTIC and OTIC) and tracking as taught to police and lowland rescue personnel.

	<i>POLICE (PoISA)</i>	<i>LOWLAND RESCUE</i>	<i>TRACKING</i>
<i>Pre-requisite training</i>	<i>3 years as Licensed Search Officer</i>	<i>12 months probationary period including local training, fitness test, police check</i>	<i>None required, but either military, hunting, wildlife photography or lowland search experience helpful</i>
<i>Length of training</i>	<i>20 days of full-time residential training</i>	<i>10 days initial training through UKLSI; then an additional 7 ½ days full time training to get to search managers level.</i>	<i>Initial training 10 days, Pursuit Tracking Instructors Course (PTIC) 3 weeks, Operational Tracking Instructors Course (OTIC) 6 weeks</i>
<i>Navigation</i>	<i>Not taught</i>	<i>Taught with map reading</i>	<i>Taught</i>
<i>Map reading</i>	<i>1-hour initial course</i>	<i>16+ hours over 2 ½ days</i>	<i>Taught</i>
<i>Field craft skills</i>	<i>Not taught</i>	<i>Taught</i>	<i>Taught</i>
<i>LPB</i>	<i>1-hour initial course</i>	<i>16+ hours over 2 ½ days</i>	<i>Taught</i>
<i>Flexibility of resource</i>	<i>Monetary considerations</i>	<i>Free resource, dependent upon volunteer availability</i>	<i>Drafting in trackers will have monetary implications</i>

	<i>POLICE (PoISA)</i>	<i>LOWLAND RESCUE</i>	<i>TRACKING</i>
<i>What informs search?</i>	<i>Grampian & iFind, CATCHEM in suspicious missing person search</i>	<i>Grampian, iFind, CSR, ISRID, KStat, AIR</i>	<i>Recognising sign in a C-IED context. GSA. Understanding of natural environment.</i>
<i>CPD requirements per annum</i>	<i>4 searches per annum, no inactivity > 6 months, maintain a logbook, every 3 years relicensing course</i>	<i>20+ training sessions, local and regional workshops, conference, maintain a logbook, expected 80% attendance for call outs</i>	<i>3-5 days per annum on top of personal training, as is a perishable skill</i>

Table 5-1 Comparison of training

6 COMPARISON OF TRACK OFFSET AND TRAINING DATA

6.1 Introduction to track offset data

Do search parameters of search and rescue organisations for despondent or suicidal males have a parallel with the search parameters for the location of body deposition sites? This research explored whether this was the case. If those search parameters are similar then lowland search teams may use their existing search distance parameters for a despondent or suicidal male if they are tasked by the police to help with the search and location of body deposition sites. In an initial effort to test whether search approaches and techniques used within lowland search and rescue are potentially applicable to the search and location of rural body deposition sites, track offset data (see figure 3.4) of missing suicidal males and BDSs were examined. Lowland rescue searchers are most often tasked by the police with searching for high risk missing persons whom are either suicidal or suffering from dementia. If it could be shown that track offset distance between a BDS and a 'found' location of suicidal missing males were similar, then there might be a case for the deployment of a SAR team to search for a BDS in a rural area, as the search distance parameters would be similar. SAR teams are made up of experienced searchers and are a 'free' resource' for the police. If lowland search distance parameters for missing male suicidal persons were similar to the search distance parameters the police use in their search for a rural body deposition site, it may be advantageous for the police to deploy lowland search teams to help search for a rural body deposition site.

Track offset data (see figure 3.4) from the CATCHEM database and three lowland search and rescue databases were compared, specifically looking at the distance from a track/path/road to a body deposition site or 'found' location. This specific data known as track offset is not systematically recorded by all organisations, so only 4 databases were used for this comparison.

6.1.1 Track offset data

Quantitative distance data was obtained from the following secondary sources; KSTAT, AIR, ISRID and CATCHEM.

KSTAT data was developed by 2 IT members from within Kent LR team (KSAR) and their data is a freely accessible live database online and the data is populated by SAR teams from around the UK (KSTAT, 2018, SAR 1). All data on KSTAT is anonymised to protect the privacy of the missing persons.

The ALSAR Incident Recording (AIR) is a national database where all Lowland Rescue (formerly ALSAR) teams must input any incidents to which they have been called out (SAR 1); the AIR data is not available to the general public. All lowland rescue teams in the UK are required to upload their data. This data is analysed and subsequently used to inform the search approaches used by the teams.

The International Search and Rescue Incident Database (ISRID) was started in 2001 by John Donovan with the help of Robert Koester (Koester, 2008) to create a large database of lost person behaviour. Some of the ISRID data is available to the general public. The ISRID database which was used by Robert Koester to underpin his book *Lost Person Behaviour* (2008).

The Centralised Analytical Team Collating Homicide Expertise and Management (CATCHEM) database was originally developed by DI Chuck Burton for Derbyshire Constabulary in 1986 to help profile child killers. It is now under the auspices of the NCA and contains details of homicides dating back decades. It is a confidential database not accessible to the general public, but advice can be sought by an SIO on a live homicide or suspicious misper case. CATCHEM offers suggestions for lines of enquiry in those cases to SIOs. It contains records of sexually motivated murders of females under 21 and males under 17 (Aitken et al, 1995).

These databases all recorded track offset distance and were compared to each other. Data sets were obtained from the researchers and programmers within lowland rescue. The Kent SAR group, who developed K-STAT, kindly allowed

access to their data. Gender, age, missing person category, missing from, where found and outcome are all given (KStat, 2018, SAR 1). Data was also obtained from the CATCHEM database which records track offset distance data of body deposition sites. ISRID data was obtained through the Lost Person Behaviour book (Koester, 2008) and made available by kind permission of dbS Productions. AIR data was made available courtesy of Lowland Rescue. The exact data recorded in these 4 databases is shown in table 6-1.

The distance from a footpath/road to the place of a BDS was compared to the distance from a footpath/road (known as track offset, see also figure 3-4) to the place where a misper was found. The misper category used was for a male suicidal person (in the ISRID database the word used is 'despondent') as this thought to be closest to the profile of a homicide perpetrator (PoISA 4, FP 1, SAR 1, 2 and 4).

6.2 Introduction to training data

The other data which was compared was PoISA, Lowland, and tracking training data. For this research, training was undertaken with the police and lowland search and rescue (see Chapter 5). The following data was gathered: number of participants, CPD, pre-requisites for the training, number and rank of trainers.

6.2.1 Training data

Training requirements for Lowland Rescue and the Police were obtained through the first-hand experience and were put into tables (see table 6-2 and 6-3) to reflect the number of participants, duration of training, pre-requisite to training and ongoing CPD requirements. All data in this chapter was obtained through personally undertaking the training (see Chapter 5) with the exception of the LSO training, where only the theoretical part was undertaken due to logistical and operational constraints.

6.3 Tentative results of track offset and training data

6.3.1 Track offset data results

In table 6-1 below the information collected for each of the four databases is shown. This table shows the main differences between the data collected for these databases. There are also many similarities which are shown, together with details of other databases in table 8-2.

Data recorded	KStat	AIR	ISRID	CATCHEM
Missing category	✓	✓	✓	✓
Secondary category	-	✓	-	-
Missing from	✓	✓	-	✓
Day/night	✓	✓	-	✓
Transport - car used	-	-	-	✓
No transport used	-	-	-	✓
Location found	✓	✓	✓	✓
Location - specific	✓	✓	-	✓
Track offset	✓	✓	✓	✓
Outcome	✓	✓	✓	✓
Cause/manner of death	-	✓	-	-
Data available to general public	✓	-	✓	-

Table 6-1 KSTAT, AIR, ISRID and CATCHEM differences in data collection and availability

CATCHEM data was only available as a percentage, and despite repeated requests for the numbers on which those percentages were based, these were not provided. Therefore, the numerical data as supplied by KSTAT, AIR and ISRID were recalculated into percentages so that an attempt at a comparison of the data could be made. Below in figure 6-2 are those recalculated data from the track offset distance data.

The KStat data and the ISRID data are slightly different from the AIR and CATCHEM data. This may be explained by the fact that the ISRID data is not a 'cleaned up' database and may have inappropriate entries in it. The KStat data is a live database, which is updated by local teams voluntarily continuously, but it is a fairly new database and as such the number of entries for 50 metres track offset may not yet be sufficient enough to provide a reliable conclusion.

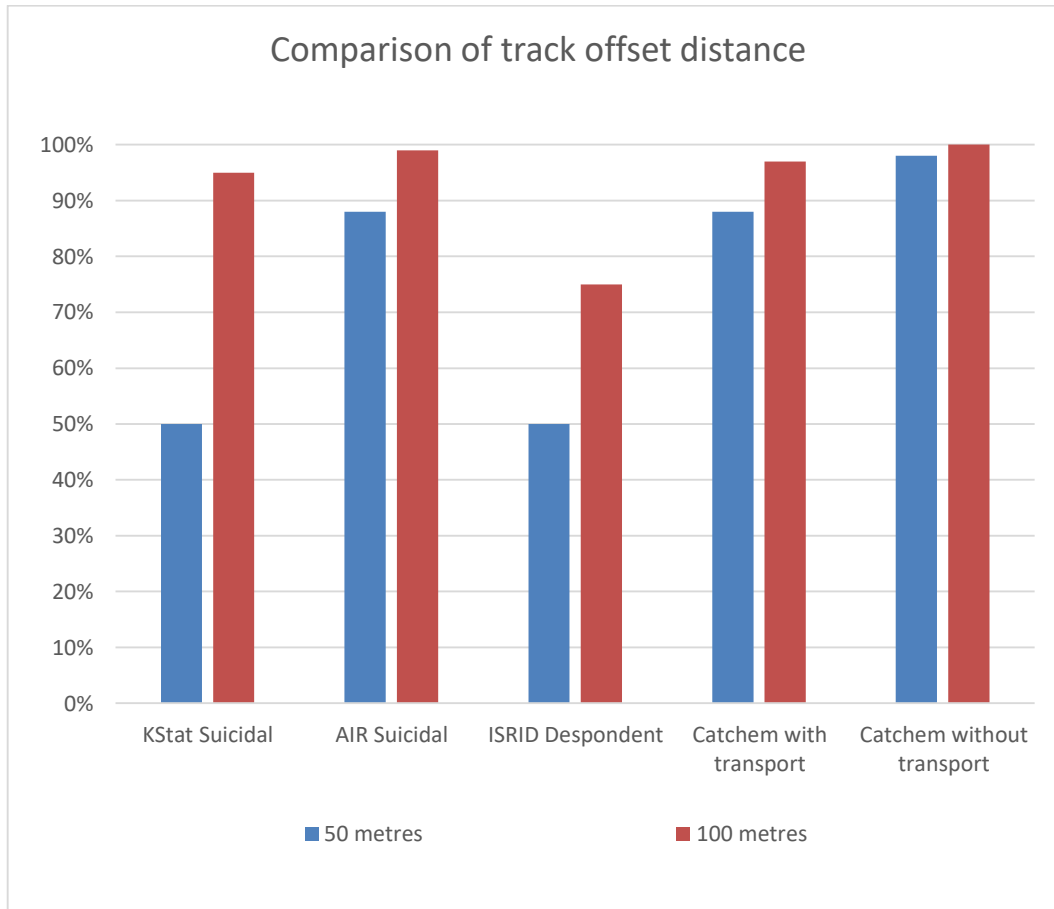


Figure 6-1 Comparison of track offset distance; the y-axis represents the percentage of suicidal male mispers or homicide victims found within the distance stated

Figure 6-1 aims to show that when a missing person or BDS is in a given area to be searched, then the chances of finding them at a specific distance from the path (track offset) varies between 50%-98% for 50 metres track offset. At a 100 metres track offset between 75%-100% are found. The percentages on the Y-axis reflect that if a person or BDS is in that given area, that percentage will be found within 50 or 100 metres of the path. It is important to remember that a person/body will be found within 50 or 100 metres of the path or track IF they are in that area in the first place. Search distance parameters are very important as they provide efficient use of search assets when searching for a target. This applies both to police, military, lowland and mountain search teams.

This preliminary data appears to suggest that the search parameters of search and rescue organisations for despondent or suicidal males have a parallel with the search parameters of homicide offenders. This means that lowland search teams may use their existing search distance parameters for a despondent or suicidal male if they are used to help with the search and location of body deposition sites.

6.3.2 Training data results

The next part of the quantitative data research was to compare training data between police and lowland search training. Training data was obtained through personal participation in search training available. Tables 6-1 and 6-2 below show duration of training, pre-requisites to training, number of participants and CPD requirements of both police and search and rescue organisations. The results below do not cover the actual contents of the various search training periods undertaken, which are summarised in Chapter 5 and Appendix C.

Course	Participants (n)	Duration in days (n)	Pre-requisite	CPD
LSO	18-24	4.5	3 years PC	4 PolSA-led searches per annum & 2 days annual course, no inactivity > 6 months, maintain search log book
PolSA	20	15	LSO	4 searches per annum + RELIC every 3 years, no inactivity > 6 months, maintain search log book

Table 6-2 Police search training

Course	Participants (n)	Days (n)	Pre-requisite	CPD
LST	20	2.5	1-year trainee	2 evenings per month, local, regional & national training (50-80% attendance per annum required)
NNAS	5	2.5	LST	As above
LPB	10	2.5	LST	As above
Tracking	4	2.5	LST	As above
PoF	10	2.5	LST	As above
TL	6	2.5	LST, LPB, NNAS plus several years of operational experience as LST	As above
SO	10	2.5	As above	As above plus evaluation of current cases
SP	10	2.5	As above	As above
SM	10	n/a	SP & SO	As above

Table 6-3 Lowland Rescue search training

The tables above show that at Search Manager's level the individual will have spent 20 days at residential courses and completed pre-course reading. They will also have attended continuous training and call-outs, with a minimum 50-80% attendance rate for both, the exact amount will depend on local search team guidelines.

The lowland courses, especially at higher levels such as Team Leader or Search Management will have fewer participants to allow for individual attention at these intense courses. The PoISA courses, on the other hand, consist of 15 residential days and a relicensing course (RELIC) every 3 years. PoISAs (and LSOs) are expected to attend at least 4 searches per annum, maintain a search log book and have no period of inactivity > 6 months. Due to the demand for PoISAs and LSOs, there is a large number of participants on each course.

Police trainers were mainly Sergeants and 2 RESAs. Lowland Rescue trainers were all experienced Search Managers, Search Operations and Search

Planners, who have undertaken additional training to be able to teach the various courses. Specialist trainers are brought in for NNAS and tracking training.

6.4 Tentative deductions from quantitative data results

6.4.1 Distance data

The distance data showed that there are some similarities between the distance from a path (track offset) between a suicidal or despondent male and a BDS. However, the data was supplied in different formats and there are variances in the way the data is collected and stored. This is further discussed in Chapter 8.

6.4.2 Training data

The training data shows that there is a variance in length and depth of training between police and lowland search and rescue personnel. There are also varying CPD and operational requirements. Furthermore, there were different levels of input and especially in the Police search training, it was dependent upon who was



available to teach a module and to what depth. This is further explored in Chapter 8 but is also touched upon in Chapter 7 in section 7.2.5.

Figure 6-2 PolSA badge and pin, awarded upon successful completion of initial PolSA training © Tanja Conway-Grim 2018

7 REFLECTIONS OF SEARCH PROFESSIONALS AND HOMICIDE INVESTIGATORS

Ex Scientia Vera

7.1 Introduction to the interviews with search professionals and homicide investigators

In order to ascertain the opinions of search professionals and homicide investigators in regards to the search and location of body deposition sites and the potential of winthroping, lowland search techniques and tracking, a series of interviews were carried out. This resulted in the qualitative data presented in this chapter.

The aim of the interviews was to get a clear definition of winthroping from practitioners in the field to enable clear communication. Furthermore, qualitative data was extracted, and the interviewees' personal experience was discussed in order to establish a weighting for their interviewees. Interviewees' opinion was sought on whether they saw winthroping as a transferrable, interdisciplinary skill.

The data in this chapter was solely obtained from first-hand 52 interviews with search, search and rescue and homicide professionals from the police, military, CT and professional searchers. All data was anonymised and participants are referred to by codes made up of their role and a number (eg PoISA 1). The interviewees were approached through networking contacts (see Chapter 2) and after initial contact, through email or telephone calls/texts a face to face was arranged at a venue of their choice. Six interviews were conducted entirely through email correspondence.

All interviewees were selected based upon either their experience and/or position within the world of search. Each individual had to be professionally involved in search, had to have undertaken relevant training in either search or homicide investigations, and have more than 4 years of experience in the field. Most people interviewed held senior or very senior positions such as national lead in their field,

head of a bureau, centre or organisation. As the process of interviewing progressed over the years more senior people agreed to take part. They were all highly experienced professionals and this is reflected in a summary of their ethnographic data below in table 7-1 and in figures 7-1 and 7-2.

	Range
Experience	4 – 50+ years
Police ranks	Police Constable - Chief Constable (Rtd)
Police roles	PolSA, SIO, analyst, senior manager, forensic psychologist

Table 7-1 Ethnographic data summary

It was noted that as the interviewees were more experienced and in more prominent positions (typically senior manager level), their interviews became more reflective and sometimes even philosophical. The full ethnographic data of the interviewees can be found in Appendix E.

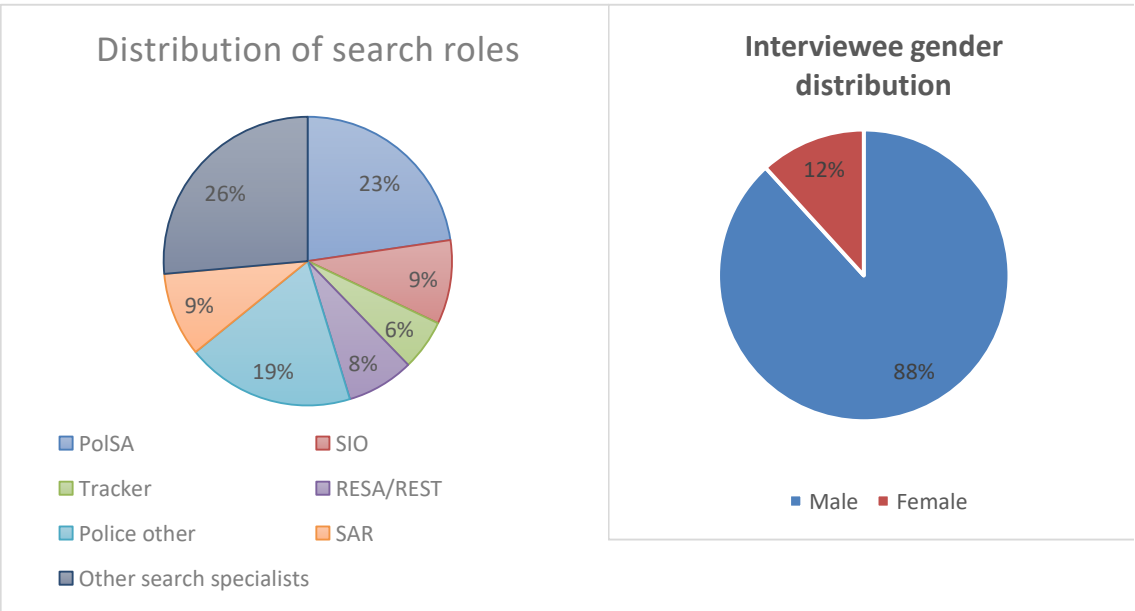


Figure 7-1 Distribution of participants' search roles

Figure 7-2 Gender distribution of interviewed search professionals

Interviews were recorded, transcribed and entered into NVivo for further processing and analysing. A sample of the questions is in Appendix D. Due to the nature of the approaches, no consent form was used, but consent was obtained in writing through email or verbally (recorded). This was agreed prior to the start of the interviewing process with the supervisor. All participants were given information and contact details of the supervisor as well as the opportunity to withdraw at any point. After the interviews were all conducted, 5 key interviewees (PoISA 4, RESA 1, SAR 1, SS3 and Detective 1) were identified through their relevant extensive experience and very senior positions within their respective organisations, and whilst transcribing their audio recordings key themes were determined and noted as key nodes in NVivo. Subsequent interviews with other interviewees were coded to these key themes in NVivo. The data gathered this way was rich data, both in content and context, as the participants were able to discuss freely. Some of their words in quotes have been incorporated in the following sections to allow for their voices to be heard in this participatory process.



Figure 7-3 Word cloud based on (edited) qualitative data

7.2 Results of interviews with search professionals

7.2.1 Winthroping & reference points

'Nothing is experienced by itself, but always in relation to its surroundings...'

(Lynch, 1960)

Winthroping was discussed with all interviewees and PolSA 4 refers to winthroping as a planning tool, a tried and proven method, to highlight areas to be searched first. This was backed up by other interviewees both from within the

police, the military, and independent search professionals. Most interviewees pointed out the value of winthroping in establishing which areas should be searched first (though in the end all areas would be searched) when the searchers are at their freshest and most effective.

Descriptions of winthroping had some variations as illustrated by the quotes below in response to the question “How would you define winthroping?”:

PolSA 4: *“Everything we teach and understand about winthroping and reference points is the ability to go and hide or conceal something and then the ability to, in effect, talk someone back into that location fairly easily, fairly quickly and retrieve what’s been hidden.”*

RESA 2: *“You’ve got to put yourself in the place of the person who is actually hiding the object. He or she got to be confident that where they are going to hide it is actually a good hiding place in terms of somebody is not going to come across it by accident, or kids playing or things like that. It’s unlikely to get involved in any disruptive works, so if someone suddenly wants to dig new drains or things.”*

PolSA 1: *“Winthroping is a way of identifying places which could firstly be suitable as a hiding place and secondly could be returned to accurately in the future by either the original hider or (more importantly) another person who would be following directions. It is the ability to return to the location accurately and recognising what points could be used to find your way back that is the essence of winthroping.”*

PolSA 4: *“Winthroping is a planning tool to allow you to prioritise your search areas. We use it to highlight areas of interest first of all, so you put your searchers at their freshest, most capable, most competent.”*

Tracker 1: *“Essentially it is a way of ‘getting into the mind of your subject’ by understanding human behaviour and decision-making and how this is influenced by terrain, features, markers, boundaries and natural lines of drift.”*

PolSA 5: *“A military search technique developed in Northern Ireland using reference points.”*

Below in figure 7-4, some observations on winthroping by various search professionals are presented.

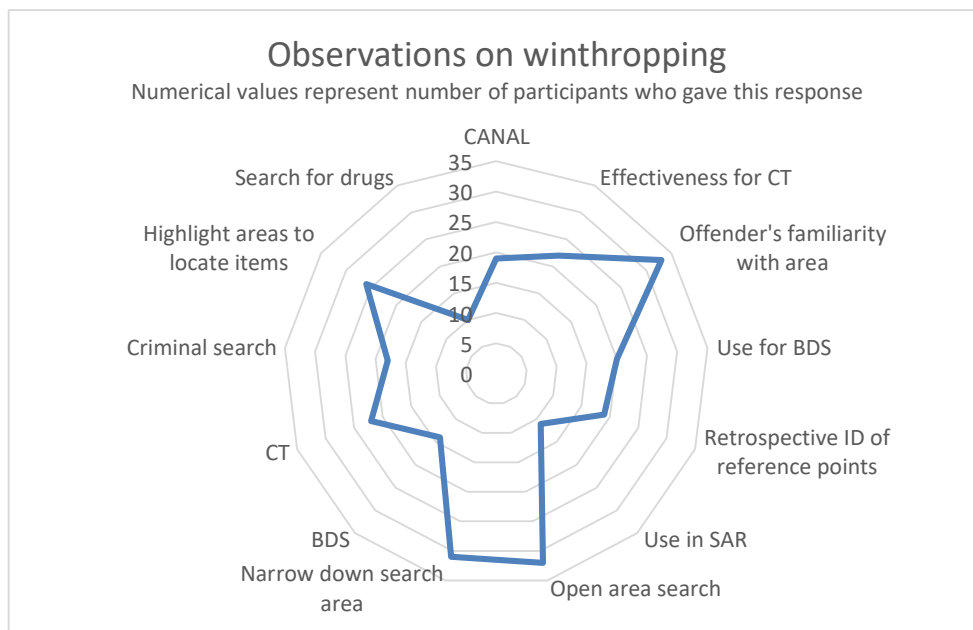


Figure 7-4 Search professionals' observations on winthroping

Offender's familiarity with an area (n 33) and the use of winthroping in open area search (n 32) were seen as the most frequent aspects, followed by narrowing down search areas (n 31) and to highlight areas to attempt to locate specific items (n 26). Next came its use in CT (n 22) and the effectiveness of its use in CT (n 22). The headings in this radar chart were extracted from the interviews and were points made by the interviewees themselves, rather than based upon questions by the interviewer. This was volunteered data and therefore not indicative of a full group data set, rather this is a voluntary sample which could be changed if all participants had been asked questions relating to these headings.

Figure 7-5 below illustrates the familiarity with winthroping amongst the interviewees. It clearly illustrates that nearly all search professionals had at least heard of winthroping, though were not necessarily trained in its use, despite utilising it.

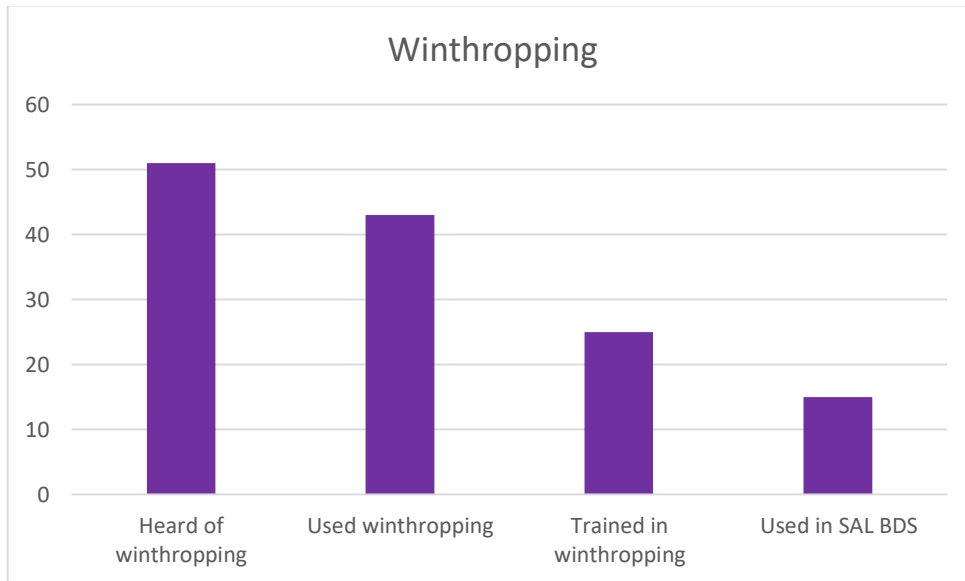


Figure 7-5 Familiarity with winthroping amongst 52 interviewees

7.2.2 Fault lines

Fault lines in the context of this research describe a weakness in a system that may cause problems or failure. Fault lines were not part of the original research questions, but it became abundantly clear that there were major issues regarding communication, rank, monetary restraints, statistics, and procedures. The key interviewees all identified fault lines as well and therefore it was felt it was important to include them in this chapter.

Just over 77% of those involved in actual search identified fault lines. Below in figure 7-6, the main fault lines identified by interviewees are shown. Some interviewees just commented upon one aspect, others mentioned several issues within their interviews.

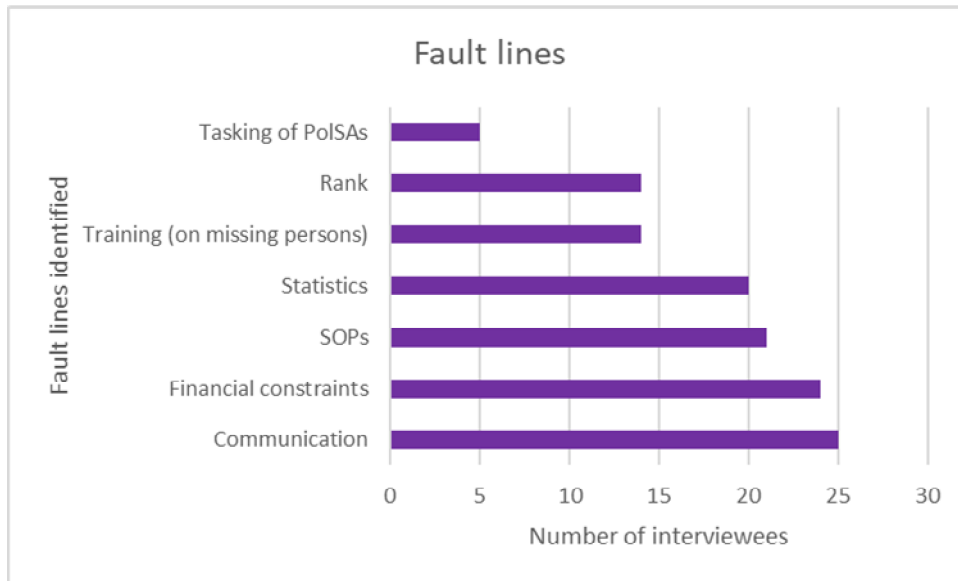


Figure 7-6 Fault lines identified by interviewees

Below are a few quotes from a number of the interviewees illustrating some of the issues they had identified. These are discussed more in depth in section 8.4.2.

Tasking of PolSAs

PolSA 7: *“You can miss things because it depends upon what you are told you are looking for at a time.”*

“You tell me I am looking for a 50 kg 13-year-old girl alive, she's not there. If you are asking me to look for a buried body wrapped in polythene I can't say for sure, because that is not what I have looked for.”

Communication

SIO 3: *“You have 47 different forces, all doing their own thing, and they really don't share information much.”*

PolSA 7: *“Search... it is very specialist, trying to get people to understand how specialist it is, is a challenge sometimes.”*

Rank issues

PolSA 5: *"I have been into command team meetings, and they have looked at me and thought why have we only got a sergeant PolSA? Can't we not have an inspector? So, then I have to explain that actually they are trained exactly the same as me, I am fully qualified."*

PolSA 7: *"We get a little bit of rub where if you are just a PC, the advice is not as, not that it's not believed, it is not treated with the same level as it might be from an inspector."*

Standard Operating Procedures

PolSA 7: *"Some police forces seem to code a missing person as a concern for welfare, rather than a missing person. Because of the varied implications, it has on their level of responsibility to deal with it."*

Detective 1: *"And police forces don't operate on the same version of it (a missing person app for police forces), despite the most current version being available free of charge to every police force that uses it, there is an annual license fee that gives them access to all the upgrades, and then they fail to implement the upgrades. Because it is not in the IT strategy, because there is no time because it's money for training needed."*

Financial constraints

PolSA 5: *"Money is driving essentially everything we do in here because we have to justify, because it is public money."*

SA 2: *"Austerity, shrinking police resources, inability to meet the potential costs of 'expert' support."*

SIO 3: *"When I was doing it (investigating murder) you could call upon all the resources you needed, I don't think that is the case now, I think that is changed. With budget cuts and everything."*

7.2.3 Homicide, body deposition sites & suspicious missing persons

Most of the interviewees had been involved in homicide investigations in a variety of capacities and roles; ranging from SIO, PolSA, LSO, tracker, forensic psychologist, forensic archaeologist, detective, search advisor to subject expert or dog handler. Twenty-seven interviewees had practical experience with homicide investigations, mainly at senior and/or investigative level.

Four themes emerged from the interviews (see figure 7-7 below) when homicide and body deposition sites were discussed:

- Tasking
- Complexity
- Rarity
- Familiarity

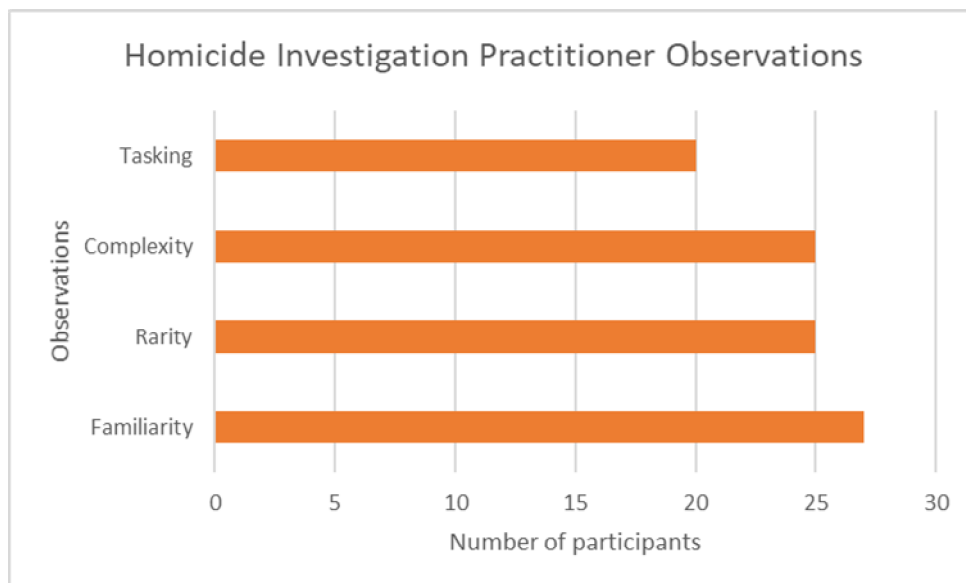


Figure 7-7 Issues identified by homicide investigators

Tasking – Clarity of tasking was identified as important by search personnel. Having a clear contract with the SIO meant search personnel was able to search more effectively, but miscommunication or lack of clarity could mean searches were implemented on the wrong parameters. Examples were given of searching for a missing alive 12-year-old girl of a certain description, only to be told later that it was, in fact, a suspicious missing person investigation and they expected

the girl to have been the (concealed) victim of a homicide. However, the team had been looking for a live victim, not a concealed homicide victim. And the girl's body was missed in two searches of the house. They are very different search strategies. Further examples included being tasked to search for a specific type of weapon, the search was concluded without the weapon being found in the allocated area, only to be told that the weapon was, in fact, another type of weapon (which they had not searched for), resulting in the area having to be searched again, when the actual weapon was recovered and secured. Searching for anything is very different from searching for something specific and this clear tasking is crucial for successful search and efficient use of search assets.

Complexity – It was noted by all interviewees with relevant experience that most homicide investigations are of a domestic nature and take place solely within a domestic setting, with the victim left in situ. The perpetrator is generally known quickly and there is often a fairly quick resolution of the case.

When the victim is not found immediately it has profound implications for the investigating police force in terms of resources and press coverage as well as pressure from the family and unease within the local community. If a case remains unsolved, it will be regularly reviewed by a 'cold case' team, which may lead to renewed investigations with further resource implications and rekindled emotional turmoil for the family. The longer a homicide victim's body remains missing, the harder it will be to obtain forensic evidence from the body, once it is found, such as establishing the cause of death. This complexity may mean that other resources need to be called upon such as the National Search Advisor and other resources from within the NCA or other 'outside' experts.

Rarity – It was noted by nearly all interviewees with relevant experience, that a 'no body' homicide was a rare event. However, they all agreed that when this did happen it had potential implications for the investigation due to the need for increased resources and assets in order to find the body. Whilst it is possible to be convicted of homicide without a body having been found, it is easier to convict with that evidence and, of course, it is imperative for the family to have their loved one returned to them so that they do not have to deal with ambiguous loss. Having

a loved one returned means the family has the chance to start mourning and through funeral rites start the process of healing and closure. Murder may be rare, missing people being murdered rarer still, and a 'no body' murder even rarer, but it does happen and the ramifications are significant in terms of resources, press coverage, family grief, and societal unease.

Familiarity - relates to the fact that offenders are often familiar with the site where they dispose of a body and in the case of a serial offender, this familiarity may be important in their MO. Familiarity means offenders feel safer when committing the offence and when disposing of the body and other evidence. This is also noted in the literature on this subject (COS/CATCHEM, 2007; Hunter et al 2013; Hunter and Cox, 2005; Nelson, 1994, Boudreaux et al 1999). It was noted that offenders often chose to deposit bodies not too far away from either the abduction or murder site. All interviewees with experience in this field felt that this was because to be caught with a dead body in a car was not something the offender could get away with, so as a result, an offender would reduce that risk either consciously or subconsciously. Sometimes in an investigation, it became clear that offenders would choose a site that they knew from when they were young.

7.2.4 Lowland Rescue & tracking

PolSA 4, a highly experienced and very high-ranking search professional, was very much in favour of using Lowland Rescue teams and had done so himself. He specifically mentioned the value of a highly trained, self-sufficient and dedicated team, who were often able to come out at much shorter notice than the police search teams. This combined with the fact there is no cost to the police of calling upon Lowland Rescue to help out with searches, made him wonder why not more police forces made use of them. PolSA 4 and RESA 1 were involved in finding out whether tracking could have something to offer police search. When both PolSA 4 and RESA 1 retired this avenue was no longer pursued.

Several other search professionals, however, do mention the use of trackers as well and their value to an ongoing investigation, whereas the trackers themselves (all with military backgrounds) recount being involved in SAL for BDS, as well as for other purposes, such as evidence gathering, weapon retrieval and highlighting

areas where there has been vegetation disturbance, which therefore may be appropriate to search first.

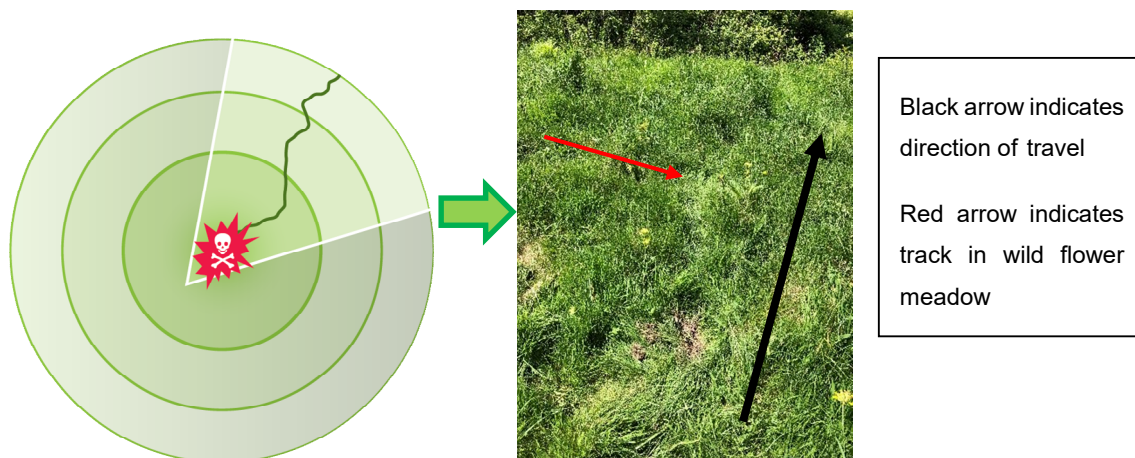


Figure 7-8 Sector search in tracking ©Tanja Conway-Grim 2018

Figure 7-8 above illustrates how a fresh track cutting through a wildflower meadow may indicate the direction of travel through the way the grass is bent (Trackers 1, 2 & 3). In-depth knowledge of the natural world (a common feature in trackers) means they will know whether an intact spider's web on a track is



Figure 7-9 Intact spider's web © Tanja Conway-Grim 2018

recent or older. This can help age the track as some spiders make a new web every 24 hours, see figure 7-9 as an example (Trackers 1, 2 & 3).

The use of a specialist skill such as tracking appears to depend upon the familiarity with the technique by the PolSA or SIO. The NCA does have a database with such specialists available for PolSAs and SIOs.

7.2.5 Training

All interviewees seemed happy with the level of training they had received, regardless of which discipline they originated from (police, military, lowland rescue, and other search professionals). However, it was specifically mentioned by several PolSAs that the missing person part of the initial PolSA course was

too short, as was the crime search section. This has now been addressed and the initial PolSA course now has 2 weeks CT search training, 1 week of misper training and 1 week of crime search training (PolSA 8 and SAR 1). Closer cooperation between the Police National Search Centre, Lowland Rescue and Mountain Rescue on the search curriculum have also been established after several years of negotiation (PolSA 8 and SAR 1).

There are also some examples of local cooperation and training between individual police forces and Lowland Rescue, with some LR search managers providing input on local police search training (SAR 1). PolSA 4 and RESA 1 both identified the need for LR input on the initial PolSA course some years ago (2015) and felt it would be beneficial to get a different perspective on for instance 'SCENARIO'.

7.3 Summary of qualitative data results

The qualitative data suggest that despite a variety of interviewees from a number of different strands within the field of search and homicide, there are some common themes emerging. All bar one of the interviewees had heard of winthropping and most had utilised it even if not specifically trained in its use, though not necessarily for the search and location of body deposition sites. One interviewee, in charge of protecting a National Critical Infrastructure (NCI), noted that their searchers' familiarity with the structure was crucial in being able to detect even minute changes or additions to the building (Security 1).

Fault lines was a major (surprise) theme that emerged and the lower the rank the bigger impact it appeared to have. None of the SIOs interviewed had a bad word to say about PolSAs and in fact, commented upon the professionalism of the PolSAs. Most PolSAs were aware of rank issues, lack of clarity in tasking and some expressed frustration on being limited to being able to establish their own search boundaries.

Themes of tasking, complexity, rarity, and familiarity emerged whilst discussing homicide and body deposition, and in fact, the offender's familiarity with a BDS was mentioned by all 27 interviewees directly involved in homicide searches.

This section looked at getting a clear definition of winthroping from search professionals. Through using semi-structured questions qualitative data was obtained, and several themes emerged as outlined above. Interviewees' personal experience was discussed in order to establish a weighting for their knowledge. Interviewees' opinion was also sought on whether they saw winthroping as a transferrable, interdisciplinary skill.

In the next chapter, the results from both the quantitative and qualitative chapters will be discussed in relation to the search and location of body deposition sites.

8 DISCUSSION

8.1 Introduction to discussion

Can the use of winthropping, lowland search techniques and tracking help with the search and location of rural body deposition sites? And can an LR team help in the search for and location of a body deposition site, especially surface deposition? This chapter will attempt to address the answers to these questions.

8.2 Training discussion

Search training was undertaken with Lowland Rescue and the PNSC to ascertain first-hand differences and similarities of the various training requirements. Table 5-1 in chapter 5 clearly showed some of the differences in training between the police, Lowland Rescue and tracking training. Whilst the police obviously have many other tasks apart from searching for missing people and locating a BDS, it still does not explain the variation in training hours spent on, for instance, navigation. Three specific areas from the training undertaken will be discussed; namely tracking, winthropping and reference points. Below in table 8-1 the characteristics of these three search techniques as well as wayfinding are illustrated.

Technique →	Winthropping	Combat Hunter	Tracking	Wayfinding
Orientation	✓	✓	✓	✓
Observation	✓	✓	✓	✓
Reference points	✓	✓	✓	✓
Think like the subject	✓	✓	✓	-
Familiarity with landscape	✓	✓	-	✓
Need to be concealed	✓	✓	✓	-
Field craft skills	✓	✓	✓	-
Accessible academic evaluation	-	✓	✓	✓

Table 8-1 Characteristics of search techniques that utilise reference points

8.2.1 Tracking

Tracking as a skill is not taught at all to police LSOs, but interestingly the police in the Netherlands have started teaching their dog handlers tracking, following initial training by British military trackers, and have found it to be highly effective (Tracker 1). Tracking is taught to Lowland Rescue team members as a separate course and is also taught by the British military at the 'jungle school' in Brunei (Trackers 1, 2, 3). As figures 5-7 and 5-8 in section 5.5 illustrate, tracking can be used to reduce the areas that need to be searched. If there is no track then this reduces the likelihood that someone has passed through. This can help prioritise areas to be searched first and allows searchers at their freshest and most effective in those areas with the highest probability of detection of the intended target; be that a missing person, a body deposition site, forensic evidence or direction of travel.

8.2.2 Winthroping

Breaking up winthroping into its component parts makes its similarities to other approaches clearer. Tracking, Combat Hunter and wayfinding use observation, orientation, navigation, and reference points, whilst only wayfinding does not consider concealment as illustrated in table 8-1 above.

Rather than thinking of winthroping as a technique in isolation, used solely in CT operations, it might be more conducive to think of it in its component parts. These, arguably, are:

Observation – Orientation – Navigation - Reference points - Concealment

Winthroping as a technique is used to search for and locate a site that is used by a third party to hide something either long, medium or short term, using reference points in a landscape to navigate to that site. That site would need to have the following characteristics:

Concealment – Availability – Non-attributable – Accessible - Locatable

This is also known as CANAL (Policing, 2015).

Furthermore, winthroping should be seen as a technique used by searchers to locate or search for something, whereas the act of hiding would require different strategies. These would include familiarity with the landscape, orientation, navigation, concealment, distance from home/work, accessibility and availability amongst other determining factors (see Rossmo and Rombouts, 2017; Townsley, 2017 for further discussion on this).

Familiarity is a theme that has cropped up consistently. It is mentioned by nearly all people involved in search as being a pre-requisite for a body deposition site. How does one know when one is safe to deposit a body if one does not know the area? How can one be concealed in unfamiliar territory? Yet it seems unclear how much of a role the offender's familiarity with an area plays in the search strategy of an SIO or a PoISA. There are references made by search professionals to cases where they suspect a BDS was on a site familiar with the offender, but practical considerations prevented exploring that. Major building works and major roads were specifically mentioned as suspected body deposition sites, but there was not enough evidence to justify tearing down buildings or digging up motorways. Whilst winthroping per se might not be useful in all cases, understanding the use of reference points, how people orientate and navigate a landscape and the importance of familiarity with(in) an area, may play a role in informed search.

Can winthroping be useful in the search and location of body deposition sites? If broken down into its component parts and used in conjunction with other search techniques and approaches, it can be part of an informed search approach. A comparison between winthroping, Combat Hunter, tracking and wayfinding as illustrated in table 8-1 shows that those techniques and approaches have quite a lot in common and it may be possible to utilise elements from each to be able to search more effectively. Furthermore, whilst there is not much academic literature accessible on winthroping, the other techniques have all been subject to academic scrutiny to a greater or lesser extent, and it may well be worthwhile to explore this further. Wayfinding in particular, though a complex intricate subject in its own right, with many applications and theories, may be useful to establish

search criteria and a deeper understanding of how people navigate landscapes. Part of this approach should be linked to the use of location charts, in order to collect data on body deposition sites, to allow for independent analysis at a later date. Appendix F shows an example of such location charts.

8.2.3 Reference points

During SAR training it is common to visit sites where people have killed themselves to start to understand people's behaviour who are in that frame of mind. The police do not commonly re-visit homicide scenes or BDSs either during search training or as CPD, yet this could, perhaps, lead to an understanding as to why a specific site was chosen. Whilst individual search professionals commented upon reference points at a body deposition site, this is of course retrospectively, however, unless this is actually tested and a thorough study is made of feature points and distances at BDSs, it will remain difficult to draw any firm conclusions. What was striking was the difference in the interpretation of reference points between police and military search personnel. Military personnel interviewed, involved in search, commented upon their use of reference points to help locate a BDS (RESA 1, REST 1, Tracker 2). This is most likely due to their training in reference point search, even though this is given in a different context, as well as their general situational awareness. Interviewees with military training seemed more fluid in their ability to transfer skills from one area to another area. Within the police service, it is not uncommon that training for skills achieved (such as advanced driving skills) in one constabulary, need to be re-taught if transferred to another force, due to organisational requirements (PDH 1).

8.3 Track offset distance and training discussion

8.3.1 Track offset distance

There are several important factors to note with the distance data comparisons which need to be taken into account. The distance compared was the track offset distance between the found location of suicidal/despondent male mispers and the BDS based on distance data in CATCHEM.

Organisations record data quite differently and even within organisations data is recorded inconsistently. For example, there are national police databases (through the NCA) and local police forces databases (through each of the individual forces) which record, for instance, missing people in different ways. The information collated may be variable. Within search and rescue organisations there is, as with the police, a problem in the consistency of data collection and what data is collected. Some groups will collect track offset distance data (which was the data compared here), others do not record this, but do have extensive data on exactly where someone is located, for example in a river or structure.

There is no standardised method of collection, for instance, using the same increments of distances (see table 8-2). Having said that, the LR track offset distance data presented here is based on actual measurements in metres and this data is collected consistently by the organisations involved. It is, in fact, a requirement for Lowland Rescue teams to collect and submit this data, within a set time frame, to the national Lowland Rescue organisation to be analysed for the AIR database (SAR 1, SAR 4). Submissions to ISRID and KSTAT are not compulsory (SAR 1). Most LR teams now use SARMan and the team members are tracked throughout the search and their routes mapped on the system, leading to accurate and verifiable distance data collection. In the context of this research, the UK LR track offset distances were reliable and valid.

Data recorded under homicide or missing people categories do not reflect the '*missing missing*' people, people who have not been reported missing or who are simply not missed. Data recorded under homicide doesn't include people whose missing episodes led onto other recorded crimes such as rape, assault or abduction. If someone is reported as missing but turns out to have been abducted, raped and murdered, it will only be this last crime that is recorded. This means that a potentially rich source of data on missing people and their outcomes are absent in the statistics and subsequent analysis. Assumptions are made about homicide based on recorded facts. It would be interesting to take into consideration, for analysis purposes, the crimes directly preceding the act of homicide as well, to see whether any underlying trends would emerge. As the

'missing missing' are absent from the statistics, it is difficult to make any inferences about how that data might affect track offset distances.

The CATCHEM database appears to have been last updated in 2007, with any subsequent recent data not included in available publications. The CATCHEM data is not available to the general public. The percentages for track offset data for deposition of a body with transport do not add up to 100%. The CATCHEM database was originally developed by Chuck Burton for Derbyshire Constabulary to help solve a specific serial murder case of 3 linked sexually motivated child homicides (Aitken et al, 1996). It was subsequently used to describe other child sexually motivated murders, but is now also used for adult and non-sexually motivated murders; it is, however, not very clear if and how this has altered the figures. This information was requested several times, but the requests were not responded to. Considering the recent increase in fatal knife crimes and acid attacks and some cases where the victim was disposed of at a considerably longer distance than established search distance parameters (*Pamela Jackson* 2013), it would be interesting to note whether by adding more recent homicide data, other trends would emerge. CATCHEM is used to offer investigative lines of enquiry and may be used for predictive modeling (Aitken et al, 1996).

Statistical data may also be corrupted, which was clearly illustrated in the 'Vermisten op Kaart' report (Leiden and Hardeman, 2015). If there is not a clear understanding of exactly which data has been collected, how this data has been collated and analysed and the context of data collection and interpretation, data in itself may potentially be misleading, misguided, misinformed or incomplete. This was identified by a number of interviewees in the qualitative data section. Data may be corrupted, or filed in such a way that it is not obvious what it relates to. As so aptly discussed by Leiden and Hardeman (2015) missing people could be duplicated on different databases, wrong data could be entered or recorded and records not kept up to date. Regular cleaning up of databases and coordination and consistency of reporting are crucial in order that databases reflect accurate figures.

The above reservations about the data really show that there is huge scope for improvement for the collection of distance data. A standardised method of collection, ideally with the same distance increments in metres, would be a good start. The Missing Persons Bureau hopes to implement a central register for missing people to be populated from individual police forces' systems. However, as yet, there is no consistency in how police forces record missing persons and it very much depends on the individual officer filling in the report on a system such as COMPACT.

With the distance data it is important to remember that the distance measured was just track offset; i.e. the maximum distance from a track or road to a deposition site. Other distances such as the distance from IPP, PLS or LKP were NOT measured as with homicides these are distances that are more relevant to the offender rather than the victim. Most victims are not in control of their murder site or deposition site and are either forcibly taken or conned to go there whilst still alive (Tracker 2) or transported there after death. There appears to be a separate correlation between the geographical distance between the offender's home address and a deposition site as discussed by Lundrigan (2016),

. The distance data in figure 6-1 does suggest that using the search and rescue track offset parameters for despondent/suicidal males would also cover most body deposition sites as described in CATCHEM, as the SAR track offset for that particular category is that 75% will be found within 100 metres of track offset (if they are in that given area of course) and the CATCHEM data suggests that 100% of body deposition sites are found within 100 metres if transport is used, whilst if no transport is used 98% of body deposition sites are found within that range. This would suggest that utilising a lowland search and rescue team in the search for and location of a rural body deposition site, especially surface deposition, would be compatible with LR's current search procedures.

Table 8-2 below illustrates the differences across the major databases in the recording of data in regards to missing persons and homicide victims. No data on weather conditions appear to have been recorded, yet there is evidence from wayfinding and search and rescue literature that weather does influence a person's behaviour in terms of speed and distance. More details would be available on homicide case files held by individual police forces, but this detailed information is not centrally recorded. It is also not easily extracted from the individual files, nor does the police have the resources to do so. Access to these highly sensitive files is not granted to people without the appropriate professional training, position, and police or security clearance, making it more difficult to analyse the potentially rich data contained within those case files.

The distance data (figure 6-1) showed that the track offset distances as recorded by KSTAT and AIR were broadly similar. The CATCHEM track offset data at 50 metres and 100 metres was similar to the KSTAT and AIR data. ISRID data was slightly different, an observation possibly explained by understanding that ISRID data is based on international data and this data may be region specific (Koester 2008). KSTAT, AIR and CATCHEM data, on the other hand, are all based on UK observations. The CATCHEM distance data does compare to USA distance data as discussed by Keppel and Weiss (1993) when US homicide detectives suggested a distance no greater than 150 feet from the murder site to deposition site. These experienced US homicide detectives also gave 150 feet from a track or path as the maximum deposition site distance. There are, however, cases where much greater distances have been noted in body deposition sites and a highly experienced homicide search professional (SS3) did an experiment to show that a fit and reasonably strong man can carry a grown woman over a much greater distance.

It does seem that between 88% and 98% of body depositions take place within 50 metres of a track. The CATCHEM data suggests that nearly all body deposition sites are within 100 m track offset from a path. Though one could argue there may not be many places in the UK that are not within 100 metres of

a track, in rural areas, there are vast swathes of land nowhere near an accessible track as any pilot or investigation of a rural OS map can verify.

	CSR ⁷	ISRID ²	AIR ³	KSTAT ⁴	iFind ⁵	Grampian ⁶	HI ¹	CATCHEM ⁸
Gender	✓	✓	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓	✓	✓
Category misper	✓	✓	✓	✓	✓	✓	-	✓
Secondary category	-	-	✓	-	✓	-	-	-
Missing from	-	-	✓	✓	✓	-	-	✓
Time missing	-	✓	✓	✓	✓	✓	-	✓
Day/night	-	-	✓	✓	✓	-	-	✓
Transport car	-	-	-	-	✓	✓	-	✓
Public transport	-	-	-	-	✓	✓	-	✓
Location	✓	✓	✓	✓	✓	✓	✓	✓
Location general	✓	✓	✓	✓	✓	✓	✓	✓
Location specific	✓	-	✓	✓	-	-	-	✓
Distance	✓	✓	✓	✓	✓	✓	-	✓
Distance IPP	✓	✓	✓	-	-	✓	-	-
Distance LKP	-	-	-	-	-	✓	-	-
Distance PLS	-	-	-	-	✓	✓	-	✓
Distance HA	-	-	-	-	-	-	-	-
Track offset	-	✓	✓	✓	-	-	-	✓
Outcome	✓	✓	✓	✓	✓	✓	✓	✓
Outcome fatality	✓	-	✓	✓	-	✓	✓	✓
Outcome Injured	✓	-	✓	✓	-	-	-	-
Outcome uninjured	✓	-	✓	✓	-	-	-	-
Cause/manner of death	✓	-	✓	-	-	✓	✓	-

Table 8-2 Comparison of recorded data on databases

¹ Homicide Index (2018); ² With kind permission of DBS Productions (2008); ³ With kind permission of Lowland Rescue (2018); ⁴ With kind permission of KSTAT (2018); ⁵ iFind (2016); ⁶ Grampian (no date); ⁷ With kind permission of Centre for Search and Research (2011); ⁸ CATCHEM (2007)

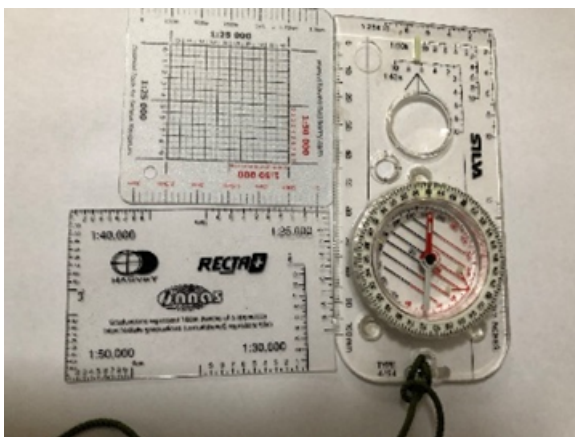
8.3.2 Training data discussion

In this section specific areas of training are discussed; navigation, pre-requisites to training, trainers and data collection. As was shown in Chapter 6 and specifically in tables 6-1 and 6-2, there were significant differences in terms of training and CPD requirements as discussed below.

8.3.2.1 Navigation

Within Lowland Rescue training a long weekend is spent just on learning to read and interpret maps and navigation, complete with night navigation, practical exercises, and exams which are pass/fail in order to achieve the required NNAS Bronze or Silver qualifications. There is ongoing training in navigation and it is practised every 2 weeks at least.

The PolSA training only had one short session (1 hour approximately) on map reading and most attendees (80%) had no previous map experience (personal observation, 2015). PolSA attendees were also not taught how to practically navigate, understand all aspects of a map, nor how to use a compass. Whereas arguably it is not necessary to be able to physically navigate an area, due to the fact searchers are directed to an area by an SIO, it would enhance their understanding of a landscape and the ability to use a map correctly would also help with understanding decision points in a landscape. This is especially important in the search for vulnerable missing people and understanding an offender's decision points when picking a route to a body deposition site.



8.3.2.2 Pre-requisites

Whilst the pre-requisites for training was appropriate for each level of training, this was not necessarily adhered to, especially within the police. One attendant on the PolSA course had only joined the police three years earlier and undertaken the LSO training 2 months prior to starting the PolSA training. Ordinarily, a PC has to have 3 years of response experience, followed by LSO training and be active and remain licensed for 3 years, before being able to apply for or be put forward to PolSA training. This was possibly a reflection of the urgent need for PolSAs in this individual's home force (personal observation, 2015).

Within Lowland Rescue there is strict adherence to the probationary period for search technicians, as due to the nature of the commitment, it is essential the probationers are physically and mentally fit, have undertaken fitness tests, received police clearance and are aware of the not inconsiderable requirements in terms of time and monetary commitment of being a Lowland Rescue volunteer.

8.3.2.3 Trainers

During the Lowland Rescue courses, there was training in situational awareness and ground sign awareness, this was missing from the police training, but is possibly addressed in other areas of policing. In terms of rank and seniority the lowland search and rescue training was delivered by experienced search planners and search managers and was very much kept 'in-house'. The police training was mainly delivered by Sergeants and 1 PC with a high input of outside agencies, mainly highlighting what they could offer a PolSA; such as the Security Service (MI5), Mountain Rescue, technical search equipment people, EOD, Missing People, and others. Some of these 'outside' lectures were in fact delivered by the police officers themselves if for instance the relevant academic or official was unavailable. This meant that there was not necessarily an in-depth analysis or comprehension of the subject matter. It also meant that those PolSAs were unable to meet in person important contacts such as the National Search Advisor or people from the Missing Persons Bureau, whom they would need in their future role as a PolSA.

8.3.2.4 Data collection

Within lowland search and rescue use is made of missing person questionnaires; these are often check lists of questions that need to be asked or addressed, for examples see Koester (2008). Both the Police and Lowland Rescue now use the 'Herbert Protocol' (Metropolitan Police Service, 2019); a guided questionnaire for relatives of people (mainly with dementia) who are at risk of going missing. Using the 'Herbert Protocol' as a checklist (Gawande, 2011) a systematic approach is used and all important questions are asked and answered, leading to a more accurate and efficient response from those agencies. Using a consistent approach of questions to be asked leads to a consistent collection of data. Data collected within the SAR community is used for analysis, albeit spread out over various groups within SAR (ISRID, CSR, AIR, KSTAT). Again, the data collected varies as do the increments of measure. Not all data is made freely available and the different organisations appear to be at variance over whose data is the most accurate. The Centre for Search and Research collects data given to them by MRTs, whereas the AIR database is populated by data stipulated by the national organisation (Lowland Rescue).

8.4 Interviews with search professionals and homicide investigators

Search and homicide professionals were interviewed for this research. Most were interviewed face to face and the interviews recorded, though some were corresponded with through email. Key stakeholders, defined as working at a strategic level, were identified and following transcription of those interviews, key themes were identified and subsequently, the other interviews were coded to those key themes. The starting questions can be found in Appendix D.

Though the process of accessing interviewees and the physical act of interviewing was time-consuming and involved considerable financial input, it was worthwhile being able to talk to people in person as the conversations often ended up intense, informative and enlightening. In contrast, the interviews solely conducted by email were very factual and it was harder to get an understanding of the richness of their knowledge and operational experience.

All interviewees were self-selective, they opted in to partake in the research, and as such are not necessarily representative of the professional search community as a whole. As semi-structured questions were used, the interviewees maintained a significant control in which direction the conversation flowed. It may well be that if a greater sample had been used, the views and findings would have been different. These interviews were a snapshot of a specific population's experience and opinions at that time. Some seemed frustrated by certain issues affecting their professional lives and were keen to discuss these.

8.4.1 Winthroping

Even though all police interviewees had heard of winthroping and most involved in search had applied it practically in CT and some aspects of criminal search work, it was very much confined to that area of police work. In contrast, the military interviewees had, where appropriate, applied winthroping to other areas as well, including the (successful) search for and location of body deposition sites and forensic evidence. These searches were mainly guided by a RESA and the actual search carried out by REST (RESA 1, REST 1). The PNSC has 2 RESAs seconded to its centre to advise mainly on CT searches, but they are also used for homicide investigations (RESA 1, PoISA 4).

8.4.2 Fault lines

Unexpectedly one of the key themes was 'fault lines', and the interpretation of fault lines ranged from lack of communication, cognitive dissonance (Syed, 2015), inaccurate or inadequate recording of data, to an unwillingness to embrace technology or think outside the box. Recent articles and discussions in Police Oracle (Buhagiar, 2019; Hudson, 2019) back up this observation of apparent reluctance of forces to embrace new IT technology. It was interesting to note the difference in approach between the military, police and SAR professionals. The military interviewees were in general open to new ideas, willing to try out new approaches. Winthroping itself is an example of this as it came from one of the serving officers in Northern Ireland who was seeking a solution to a problem and hit upon a practical, cost-efficient and effective way of addressing the issue.

Within the police (as in the military) there are set structures and hierarchies. People are expected to work within the National Decision-Making Model (Appendix I), but in reality, they often don't. There appears to be a reluctance to accept ideas and insights from a PC or Sergeant if the others in the room are higher ranking, even though the PC/Sergeant may be there in a skills-based capacity and as such is a highly trained and experienced expert in their field in their own right.

8.4.3 Homicide, body deposition sites and suspicious missing persons

During the interviews with homicide and police search professionals, whilst talking about homicide, BDS and suspicious missing persons, four themes emerged: tasking, complexity, rarity, and familiarity, which are discussed below.

Tasking describes the clarity of the task a searcher was expected to undertake and this was a theme that also emerged in the fault lines (see 7.2.2 and 8.4.2). Most PolSAs felt that there could be a lack of clarity in taskings given to them by an SIO, though often they could understand the reason behind this. An SIO's decision for a search area and search parameters are often based upon intelligence that cannot be shared with others; however, for the PolSA this can be frustrating as they may wish to adhere to established or situation-specific search parameters and are restricted by the SIO's decision to do so. This was compounded by the fact that rank played a role in how a PolSA's advice was perceived by some SIOs. Yet, at the same time, interviewed PolSAs, on the whole, were acceptant of the fact that their role was primarily as an advisor and search team leader. Issues with tasking also referred to uncertainty as to what exactly was requested. This was partly due to the dynamic nature of a live investigation, where the pace may be fast and investigative lines of enquiry may change rapidly. Confusion over what kind of weapon was being sought may result in a fruitless search for the wrong weapon. This is frustrating and tiring for the search team who often spent hours crawling through the undergrowth in a fingertip search, only to be told they must now re-search the same area for

another kind of weapon. Clear tasking from the outset, if possible, would enhance the probability of detection of what item is sought.

Complexity indicates that when a homicide involves a missing body the complexity of the case rises disproportionately, a fact exploited by some offenders who exploit the lack of communication between some constabularies to dump body parts in different areas (see Keppel and Weis, 1994). In domestic violence homicides or in street fights, the body is usually left in situ and more often than not, the perpetrator's identity is apparent either from the start or shortly thereafter. Some of the homicide professionals referred to this as 'simple' cases, the main aim was to secure evidence and bring a successful prosecution. In cases where, initially, the victim's body was missing, the case would become immediately more complex and challenging. Though these cases were rare (and this was emphasised repeatedly), they were also more intellectually challenging to the investigators and thereby more satisfying to work on. This was not meant as a discourteous observation from the investigators, more that an intellectually challenging case required all their skills and ingenuity and successful completion of such a case was deeply satisfying both on a professional and personal level.

A 'no body' homicide presents an ambiguous loss for the family and friends, as well as immense pressure on the police to find the body of the missing person. As a case goes on, the resource implications increase, with regular reviews and eventually a scaling down of the investigation. If periodic case reviews bring new evidence or intelligence to light, or when forensic techniques have improved and old evidence can be investigated again, the investigation may be rekindled, which will bring further resource implications.

The more complex a case the more pressure and controversy there seems to be. Operation Purple Wave is a case in point. *Alice Gross*, a fourteen-year-old schoolgirl in London, went missing whilst on a walk along a canal path on 28th August 2014. She was reported missing by her family and there was some CCTV footage of her on the canal path. On 3rd September the Homicide and Major Crime Squad became involved, so it was clear that foul play was suspected. At the height of Operation Purple Wave, 700 officers were involved in the search for

Alice Gross. Officers were drafted in from different constabularies, experts were called in from a variety of backgrounds. Lots of vegetation was cleared in the area to try and find her. Several Lowland Rescue teams offered their assistance and were on standby. Headlines were splashed across the front pages every day and weeks passed without tangible results. It later emerged that there had been differences of opinion between the SIO and the PolSAs in relation to the search parameters and search areas (PolSA 4 and 6, FA 1). It is believed that had the PolSA's advice been followed her body may have been recovered sooner (PolSA 4). *Alice Gross*' body was recovered on 30th September 2014. When the offender's body was recovered on 4th October (he had committed suicide along the same canal where he had abducted, raped and killed *Alice Gross*) it was described in the press as an area of dense woodland. Upon personal examination, this was actually not the case and it was clear that within a Lowland Rescue search operation, that area would have been searched very early on. A very complex case could possibly have been solved a lot quicker if the appropriate search advice had been followed and outside agencies (at no cost to the police) had been involved at an early opportunity. Operation Purple Wave was subject to a lot of scrutiny and a review due to the length of the operation and the resource implications; it was described by the Metropolitan Police Service as the largest investigation since the 7/7 bombings in 2005 (BBC, 2015b).

Rarity refers not only to the rarity of homicide itself but also to the even rarer event of the (initial) absence of a victim's body. Most homicides being investigated are of a domestic nature, with the body of the victim left in situ or are the result of criminal gang competition or an altercation on a night out. Often, but not always, the perpetrator is quickly identified and apprehended. But the resource implications for that very rare event of a no-body homicide are immense, and as a result, search techniques for a body deposition site must be optimal and based on best evidence. The rarity of a no-body homicide also means that resources are not usually directed towards research or scenario-specific training, but are rather aimed at preventative work of the most common type of homicide (domestic violence) (SIOs 3 and 4).

Smaller constabularies in particular may not deal with many homicides, and experience of search techniques and search approaches for the location of a rural body deposition site may be limited or non-existent. A neighbouring force or national specialists such as the NSA or BAU from the NCA may be called in or advice may be sought from the PNSC (PoISAs 4, 6, 8, 9, 10, SIOs 3 and 4, Detective 1). The Police is a hierarchical organisation and if someone in the position of a senior advisor or consultant does not like a particular approach, this will then not be advanced (PoISAs 4 and 8, SIO 6, SS 3). There is a tendency for people to have a personal approach to a rare and difficult problem such as the search and location of a deposition site and other approaches may not be considered (Detective 1, SIO 2). Yet it is important for organisations and individuals to evolve and incorporate ideas and approaches that can enhance search efficiency.

Rarity and complexity are often tied up together and they were certainly mentioned in the same context by the interviewees.

Familiarity

All relevant interviewees stressed that in their experience offenders were familiar with the site used for body deposition. Whereas the initial encounter, abduction and murder sites may be opportunistic, though normally still within the offender's familiar range, a body deposition site, whether chosen and prepared in advance or a hasty act after an unexpected encounter with deadly consequences, will be in familiar territory to the offender. This includes such considerations as: an offender will know their way in a familiar terrain, which is important in a stressful situation such as trying to get rid of a body, and also that the offender will know where a deposition site can be accessed, whether it is concealed, and how to get away from the site again. The offender is normally keen to be as little absent from home/work as possible, in order to establish a plausible alibi and will usually only travel as short a distance as possible with a body in the car and again as short as possible a distance from the track to the BDS to avoid detection. This ties in with the requirements of a Winthrop search scenario (CANAL – concealment, availability, non-attributable, accessible and locatable), but it also links to

elements of wayfinding (use of reference points in the form of landscape markers and familiarity with a journey) and the findings of environmental criminologists such as Brantingham and Brantingham (2017).

An offender's familiarity with a body deposition site should not be overlooked or underestimated, but can also lead to unexpected complications as illustrated below. *Gemma Simpson's* killer **Martin Bell** chose her deposition site as he was familiar with it, it had a special meaning to him and it was concealed. He would return to the site a number of times over the next 14 years before he confessed to the police. However, due to the passage of time, landmarks and reference points he had used to locate the deposition site had changed and there was a considerable search operation, involving many search experts, as well as tree clearance work to successfully locate *Gemma Simpson's* remains (PoISAs 4, 8 and 11, FA 1, FG 1).

This familiarity is similar to the experience of search operations to locate a despondent or suicidal person, who is normally found in a place familiar to that individual and usually holds a special meaning to them; such as for instance **Peter Reeve** in 2012 who killed himself in a place significant to him whilst being hunted by the police after killing a police officer (CC 1).

Yet understanding the importance of familiarity may not necessarily help, such as in still unsolved cases across the UK, where it is suspected that the missing bodies are incorporated into concrete during building renovations or in roadworks (SIO 2, PoISA 6). But understanding the significance of familiarity may inform search strategies for the location of body deposition sites. To this end it might be useful to use the acronym CAFAL instead of CANAL:

Concealment – Availability – Familiarity – Accessible - Locatable

8.4.4 Lowland Rescue and tracking

Not all those involved in homicide had used Lowland Rescue teams or tracking professionals in their homicide/suspicious missing persons investigations. However, some had and those all spoke highly of the skills, self-sufficiency, and professionalism of the Lowland Rescue teams. Though some police forces have

handed over most missing person cases to local Lowland Rescue teams, other police forces only ask for help in certain cases and utilising the LR teams for SAL of BDS is rare. Yet the advantages of doing so are clear to those who support this approach; it is a free resource, the teams consist of enthusiastic, qualified, experienced and professional members, they have all undergone police checks and extensive training and are subject to stringent CPD requirements. However, their use seems to be dependent upon the opinion or experience of an SIO or PolSA. If the SIO or PolSA has not had much, or a good, experience with voluntary search teams, then the likelihood of calling in the LR teams is minimal.

There is, of course, the danger that using lowland search teams in, what is effectively criminal search work, may have far-reaching effects upon the voluntary teams both in terms of exposure to potentially gruesome murder scenes and decomposing bodies as well as in terms of time and financial commitment. If teams are utilised more by the police this will have a direct impact upon the team's voluntary members. In the long term this may lead to 'burn out', difficulty in team member retention, increased pressure to fundraise for the team, wear and tear on vehicles and equipment and a duty of care to the mental well-being of team members. Furthermore, it would also place increased pressure on the local team committees, with additional record keeping and training. There is already significant time pressure on senior SAR committee members (SAR 2).

This reluctance also applies to the use of trackers. Some forces have been known to helicopter in trackers (due to the time sensitivity of 'sign'), others dismiss their usefulness. Some trackers have volunteered their services to the police in high profile cases, even if not appropriately trained or experienced. This has led to some high-profile failures. However, military trackers, who have been extensively trained in man tracking, including in hostile and difficult environments, can be a very useful resource for any PolSA or SIO in specific circumstances. It might also be useful to teach search teams basics of tracking and sign recognition to increase search efficiency and efficacy. Tracking is a perishable skill, so should only be taught to those people who are interested in it and who are willing to dedicate the time to both learning and maintaining it.

The involvement of Lowland Rescue teams and trackers appeared to be based on the personal preference of whoever was in charge of such decisions at the time. One team at an organisation might be really interested in the use of trackers, but upon the retirement of those team members, the idea would be dropped as it was felt important (by the incoming team) that this new team should make their own mark. This was observed several times and it was also commented upon by various interviewees. There was not necessarily a smooth transition between outgoing and incoming teams. This need to 'make a mark' or 'a new beginning' was prevalent in several search sectors and not based on informed decision making or research-based decisions.

8.4.5 Training

Whilst interviewees stated that they were happy with the level of training they received, at the same time PoISAs in particular mentioned that in their initial 3 weeks PoISA training at the PNSC, 2 weeks were spent on CT and only one week on crime scene search and missing persons (which in reality translated into 2 days crime scene search and 2 days misper search). This allocation is not based on the actual workload of a PoISA, but upon the fact that there is more funding for CT, which is a government priority. In reality, the workload of a PoISA is geared towards missing person searches and crime scene searches and in some constabularies, there will be very little counter-terrorism work (PoISA 4, PM 1).

This discrepancy in initial PoISA training seems to have been addressed and the initial course has been extended to 4 weeks, with a whole week dedicated to crime scene search and a whole week assigned to missing person search (PoISA 8 and SAR 1). The PNSC, after some years of negotiation with Lowland Rescue and Mountain Rescue, is now collaborating with the latter two on the missing person search curriculum. This still does not reflect the actual workload of a PoISA (PM 1) but is certainly an improvement. Initially, PoISAs were trained solely for counter-terrorism work following the Brighton bombing in 1984 (Wyatt 2017). Remnants of that history are still prevalent today as the PNSC teaching staff consists of both police officers and 2 attached RESAs. Secondment to the PNSC is for 2 years, usually before retirement, as it is mainly a desk job, Monday-Friday,

without night shifts, unless there is a major case on, for which advice has been sought by the SIO or PoISA (PoISA 4, RESA 1, PM 1).

There is now closer cooperation between some individual police forces and LR search managers, who provide training to some police officers and police staff on search. It is, however, regrettable that this is down to individual forces' willingness to embrace closer cooperation, rather than being based on evidence or research. Police forces are still very much independent entities, who set their own local priorities (CC 1). Yet it was identified at national level in 2015 (PoISA 4) that LR and MR input into police search practices would be beneficial. Below in table 8-3, some suggested changes to training curricula are presented. Self-care for LR teams would be important, to prevent emotional trauma, as their current training would not have prepared them for exposure to homicide scenes.

TRAINING TECHNIQUES	Lowland Rescue Search Management	Lowland Rescue Search techniques	Tracking awareness	Crime Scene Awareness	Self-care
SIO	✓	-	✓	-	-
PoISA	✓	-	✓	-	-
RELIC	✓	-	✓	-	-
LSO	-	✓	✓	-	-
Lowland Rescue	-	-	✓	✓	✓
Trackers	-	-	-	✓	-

Table 8-3 Suggested changes to training curricula

8.5 Mixed methods discussion

As alluded to in the methodology (see 3.1.2), this research encompassed mixed methods research and in order to bring the various strands together triangulation was used, a process described by O'Cathain et al (2010). This allows for the identification of both meta themes and meta subthemes and explore whether there is convergence, dissonance, silence or complementarity within the quantitative and qualitative data.

Meta themes	Interviews search professionals (qualitative)	Distance data (quantitative)	Training (quantitative & qualitative)	Convergence assessment
<i>Fault lines</i> Meta subthemes	As identified by interviewees	As identified by researcher	As identified by researcher	Convergence
Communication	Can be lack of clarity in communication within police	Silence	Clear communication in Lowland Rescue training and tasking	Dissonance
Cognitive dissonance	Inconsistent beliefs & attitudes	Silence	Inconsistent beliefs & attitudes between police and Lowland Rescue	Convergence
New IT technology	Reluctance to accept	Silence	Reluctance to accept	Convergence
Data recording	Databases not cleaned up, inconsistent recording	Inconsistent recording	Inconsistency between databases	Convergence
Rank issues	Lack of respect for role-based positions in police	Silence	In Lowland Rescue clear respect for defined roles	Dissonance
<i>Emerging themes</i> Meta subthemes	As identified by interviewees	Silence	Silence	Silence
Tasking	Sometimes lack of clarity in tasking searchers, leading to frustration	Silence	Clear tasking in Lowland Rescue due to different search structure and command	Dissonance
Complexity	Complexity identified in 'no body' homicides	Silence	Silence	Silence
Rarity	Rarity of 'no body' homicides	Silence	Silence	Silence
Familiarity	Familiarity with location of BDS/suicide site	Silence	Familiarity with location of BDS/suicide site	Convergence

Table 8-4 Convergence coding matrix

This convergence coding matrix shows that there is both convergence and dissonance in the findings and is the first step in further exploring the data in

future work. Where there is dissonance between meta subthemes it really provides scope to investigate this further. Why is there such clear tasking and communication within Lowland Rescue, whilst these are seen as problematic within the police search world? And convergence of the meta subthemes of fault lines and emerging themes suggest that potentially there is complementarity between quantitative and qualitative data, which, again, may be further probed to identify further convergence or opportunities to improve practice.

8.6 Summary of discussion

Training was undertaken in person to understand the intricacies and differences in search techniques and approaches between the police and LR. Significant differences were noted in some of the approaches, especially towards topics such as navigation and map reading.

The distance data suggests that utilising LR teams to help with the search and location of body deposition sites, may be achievable without having to change existing LR search parameters too much. It is important to note again that the distance data was the track offset, not the distance from PLS or LKP, which would give entirely different distance parameters.

Themes emerged from the interviews conducted with search professionals: winthropping, fault lines, homicide, BDS, LR, tracking and training. Whilst most interviewees were familiar with winthropping, few had applied its principles to the search and location of body deposition sites. Fault lines surfaced as a major (unexpected) topic with specific mentions for communication, financial constraints, SOPS, statistics, training, rank, and tasking. Homicide was seen as rare and complex, with accurate, intelligence-led tasking being a priority. The use of outside agencies seemed very much dependent upon the police search professional's personal preference and experience, rather than a consistent national evidence-based approach. Crime scene and missing person search training seem to have been mainly addressed in terms of extending the training period during the initial PoISA course.

Can winthroping, lowland search techniques and tracking help with the search and location of body deposition sites? The evidence presented in this discussion chapter suggests that they can all help a homicide investigation, but this will very much depend upon the willingness of a PolSA or SIO to do so. In the next chapter, conclusions will be drawn from this research.

9 CONCLUSION

Whilst homicide in the UK is a relatively rare occurrence and a 'no body' homicide is even rarer, the impact on the family, friends, police, and society of this kind of ambiguous loss is immense. The family has to cope with the absence of a body and will find it hard to gain closure. There may be community or societal unease about an unresolved murder and for the police, there are major resource implications of homicide investigations which require significant resource allocation in order to find the victim's missing body and associated forensic evidence to secure a conviction. Cold cases are regularly reviewed and investigations may be reopened if new evidence emerges, again with major resource implications.

This research looked at whether winthropping (a military counter-terrorism search technique), lowland search techniques and tracking might be helpful in the search and location of rural body deposition sites. Associated approaches such as wayfinding were also touched upon to see whether there were any similarities with winthropping and tracking. Additionally, consideration was made of which of those techniques in particular would be useful to consider for this application. It explored the training aspects of various search approaches, compared track offset distances of rural body deposition sites and missing suicidal males in order to establish search parameters, with a slight detour into wayfinding, and interviews were conducted with search and homicide professionals to gather qualitative data.

The search for and location of rural body deposition sites has been covered in some depth in the literature, though the main focus is on technological solutions and techniques. This research focussed on low-technological approaches such as winthropping. Winthropping was developed by the British Army in Northern Ireland to find weapons caches made by the Provisional IRA. The technique started to be taught from November 1984 on mainland Britain as part of the first PolSA courses, following the fatal Brighton bombing in October 1984.

A critical literature review conducted on winthroping highlighted an existing gap in the literature, partly due to classification issues. However, there is some evidence (Hunter and Martin, 1995; Killam, 2004; Hunter and Cox 2005; Harrison and Donnelly 2008; Hunter et al, 2013; Donnelly and Harrison, 2015, 2017) that winthroping has been used for the location of rural body deposition sites and it has certainly also been utilised in archaeological searches (Sturdy Colls 2015). Furthermore, in the interviews with RESAs and a REST Team Leader, it became apparent that they had all used winthroping when they had been tasked in such searches. The use of landmarks in winthroping can easily be applied to body deposition sites, bearing in mind that an offender will rarely dispose of a body in an unfamiliar site. Examples of landmarks include single tree in field or hedgerow, gate or fence in a field, natural feature that draws person's attention to it. Landmarks are prominent, permanent and not too artificial.

Whilst all, bar one, interviewees had heard of winthroping and most had been trained in it, police search professionals see the technique almost exclusively as a counter-terrorism search measure. During initial PolSA training the procedure was briefly described during the open area search module, but again, only as a CT search technique. Some PolSAs and RESAs, when interviewed, also mentioned that they had used it successfully in searches for weapons and drugs in city areas. This was a personal choice, rather than being directed from higher up. During tracking training, delivered by (former) military experts, reference points in a landscape and the role of winthroping was discussed, whilst during SAR training winthroping was not specifically covered, but there was a general awareness of the technique, especially at search managers' and instructors' level. In several interviews with search professionals, it was noted by them that there were significant reference points at some body deposition sites and 'points of find' of missing suicidal people. When breaking up winthroping into its component parts, similarities with wayfinding, an architectural technique, and tracking, became apparent and though that was outside the scope of this thesis, this is certainly worth exploring further.

Lowland Rescue (formerly known as Lowland Search and Rescue) is made up of professional volunteers, who are on call 24/7 and may be called out by the police to help in the search for missing people. They operate in small teams, led by a team leader and are given areas to search by their Search Planners or Search Managers. There are many specialisations within the organisation (canine, UAV, swift water, tracking to name a few) and selection, training, and ongoing CPD requirements are strict. Specific research-based search approaches are taught and used such as hasty search, route and path, area search, cubing, purposeful wandering and line search.

The application of lowland search techniques to the search for and location of rural body deposition sites is uncommon, though they certainly have been utilised in this way a few times as some of the interviewees indicated. Within the SAR literature, there is no mention of body deposition sites, but it does categorise missing people into specific groups. For the purposes of this research, the category for missing suicidal males was used, as it was indicated by various search personnel that this was possibly the closest 'match' to a homicide perpetrator, who intends to hide a body. The training courses were of a high standard and though there were some similarities with the initial PolSA training, there were many differences as well, as the remit of a PolSA includes crime scene search and counter-terrorism searches, whereas SAR concentrates on missing people. However, in similar topics taught across both curricula, some significant variations were observed between agencies, especially relating to navigation and map reading. If the police incorporated the NNAS training into their curriculum, this would enhance their search capacity. Several police interviewees mentioned their familiarity with SAR teams and spoke highly of them. There was some anecdotal evidence of utilisation of SAR teams for the location of one particular body deposition site, with mixed results (though it should be pointed out that the police also failed to locate that particular victim). It was noted that missing despondent males will normally always be found at a place familiar and or significant to them and it was highlighted by the interviewed homicide professionals that offenders would usually be familiar with the site used to deposit a homicide victim. This familiarity is also apparent in winthroping and wayfinding.

Missing person search in the UK relies heavily on specific databases; ISRID, AIR, Grampian, iFind, KStat, and CSR. Search strategies are informed by those databases. Some of these databases record track offset and this research investigated whether the track offset for missing despondent males was similar to the track offset of body deposition sites. If these track offsets were similar, then lowland search teams could potentially be considered to look for rural body deposition sites, as their search parameters would be similar. This research found that almost all body deposition sites were found within 100 metres track offset and that between 75% and 99% of missing despondent males were also found within 100 metres track offset (assuming that they are in that area in the first place).

However, it must be borne in mind that the deployment of a lowland rescue team by the police for the search and location of rural body deposition sites may expose that team to murder scenes & decomposing bodies, so procedures must be in place to encourage self-care and recognise possible PTSD symptoms. Lowland rescue searchers at all levels, are volunteers and being thus deployed may increase pressure on the local team's fundraising and executive committee members' commitments for record keeping and training. Therefore, it is imperative that such deployments are only undertaken after careful consultation with a local Lowland Rescue team. Team members should be able to withdraw from such a search without it adversely affecting their call-out record. Furthermore, additional crime scene training would also be required to ensure the integrity of any potential crime scene encountered.

Tracking has been in use for thousands of years, and the basic techniques can be self-taught. Tracking has been successfully used to locate forensic evidence, fugitives, the direction of travel and to locate a body deposition site. The use of trackers has been considered by the police in the past but was decided against due to the time commitment required to maintain this perishable skill. To become and remain an accomplished tracker will require significant commitment. It is possible to teach the very basics such as disturbance of vegetation, direction of travel and ground sign awareness. This can enhance police efficiency in search

by narrowing down the search to those sectors which should be prioritised to be searched first, when the search team is at its most alert. Within the literature, no mention is made of the use of tracking for the search and location of rural body deposition sites, yet in interviews with trackers, the value their skills could add to an investigation was apparent. This research showed that tracking had many similarities with both winthroping and wayfinding and further exploration of this would be beneficial but again were outside the scope of this project.

Currently, there are core data missing in homicide statistics and introducing standardised and accurate recording of appropriate data on missing people and rural body deposition sites would allow future analysis to take place. Gathering data that is already recorded by MPB, CATCHEM, private search professionals and forensic companies, allows future students and researchers to draw on richer, more comprehensive and complete data sets, which would lead to improved informed search practice. This data should be gathered from all relevant organisations and its analysis made available. Collection of this data should be made as easy as possible to ensure compliance. Gawande (2011) discusses the importance of checklists across a range of professions and situations. Checklists would present an easy way to ensure data collection and may encourage compliance. An example of a proposed 'BDS location data collection sheets' can be found in Appendix G - Location Charts.

Consistent data collection and analysis allows emerging trends to be noted and this enhances research-based practice and informs strategic search planning. Core data such as recording distance increments in metres, recording track offset distance, noting reference points at 'point of find' (be it a rural BDS or misper), temperature at time of deposition (if known), weather conditions, time of day, weight and size of victim, would all be useful data to collate and eventually analyse. It is important to encourage regular 'cleaning up' of databases to ensure only relevant and up-to-date details are stored and subsequently analysed.

The hermeneutical phenomenological approach to the semi-structured interviews with search professionals, whilst also recording their ethnographic data, allowed rich data to surface. Although the interviewees were self-selective in their

willingness to communicate, and therefore as such not representative of the population in general or of their sector in particular, it was, nevertheless, a successful approach. It enabled purposive, snowballing and opportunistic sampling to be employed to obtain willing participants and to elicit data, and also allowed for unanticipated themes to emerge.

A number of search professionals were interviewed from police, lowland search and rescue, military search and other search backgrounds. Semi-structured and open-ended questions were used in these interviews to allow new themes to emerge. Search approaches and winthopping were discussed. All but one of the interviewees had heard of winthopping and most had utilised it. One of the emergent themes was 'fault lines'; describing for instance challenges in the clarity of communication, expectations, tasking and rank perception.

All search professionals directly involved in homicide investigations mentioned in their interviews that in their experience offenders were always familiar with the area in which they disposed of a body. This is backed up in the literature on body deposition as well as individual cases where the offender would deposit a body at a place known, and often, significant to them. This suggests a link to the familiarity with the landscape in both winthopping and wayfinding.

During the interviews, a gap was identified in the awareness and acknowledgment amongst SIOs that the PoISA role is a skills-based role rather than a rank-based role. Acknowledging the fact that a PoISA is a skills-based role will aid mutual understanding and acceptance of the fact that a PC PoISA's advice is equally as valid as an Inspector PoISA's advice. They will have undertaken exactly the same training. Rank will have no bearing on the quality of the advice given. Most SIOs will be aware of this, but it is important that all SIOs understand and acknowledge the technical skills of a PoISA and that this role is not rank-based. This can be challenging in a hierarchical organisation such as the police, but it is imperative for future success and organisations must evolve to stay current with new research-based practices and insights.

It was apparent there is a great wealth of knowledge, experience and willingness to share expertise, from the professionals interviewed. However, this can only

take place if there is a change in the current political climate with its emphasis on counter-terrorism and perceived priorities. The in-depth understanding of and passion for homicide, missing people, lowland search and tracking was palpable in every interview and this willingness to engage with research should be encouraged at all levels.

One of the most important findings to come out of this research is the lack of available data on body deposition sites. It would be beneficial if body deposition site data were centrally collected, collated and analysed. Factors such as familiarity from the offender with the site, weather at the time of deposition (if known), mode of transport used and the recording of reference points would be useful to investigate. Three further recommendations that emerged are:

- Site visits to actual body deposition sites should be undertaken to record the above data where possible
- Missing person databases should be regularly 'cleaned up' to ensure only accurate data is maintained
- Using check lists may aid consistent data collection

This research found that there were opportunities to improve the training for PolSAs and LSOs in terms of teaching more in-depth navigation, Lowland Rescue search techniques and basic awareness of the concepts of tracking such as vegetation disturbance, direction of travel and ground sign awareness. Furthermore, if the basics of winthroping/reference points were taught as a transferrable skill, rather than just as a counter terrorism technique, it will encourage future PolSAs and LSOs to incorporate and apply the technique into searches for body deposition sites. Fault lines need to be acknowledged and the issues raised need to be addressed to encourage more clear communication and working practices. There is a lack of consistent data on body deposition sites. This could be addressed by looking at extant data, promoting consistent data collection at current and past body deposition sites. Regular cleaning up of databases is also important to avoid duplication, false entries and resolved cases. It must also be understood that there will always be 'missing' data especially in relation to the 'missing missing'.

A 'no body' homicide remains a rare event and the impact on a victim's family and friends, the police and society are significant. This research aimed to investigate whether winthroping, search and rescue approaches and tracking could help with the search and location of rural body deposition sites. The primary conclusion of this research is that incorporating winthroping, tracking and LR search techniques and approaches would enhance the search for and location of rural body deposition sites.

10 SUGGESTIONS FOR FUTURE RESEARCH

There appear to be parallels between wayfinding, winthroping, familiarity with a landscape and reference points. It would be useful to investigate this further, to rigorously map any similarities that may be transferrable to the search for and location of rural body deposition sites, specifically the use and understanding of cognitive maps.

The potential of involving Lowland Rescue search planners and search managers in the planning for the search for and location of rural deposition sites must be carefully considered. This approach has the potential to speed up the search without further resource implications for the police. This could be further explored through a preliminary model of testing the potential efficacy of such an approach. This was originally planned and had been designed for this research, but had to be abandoned due to the workload involved. An intended 'search summit', a meeting of small syndicates of search professionals from a variety of backgrounds to discuss cold cases to elicit new approaches and ideas, also could not take place for the same reason, despite the fact that participants had already been identified and approached. Both had been original ideas for this study, but there was not enough time to take these ideas forward to conclusion.

Follow-on work should continue to interview search professionals and homicide investigators, as a number of notable people who have not been approached. A summary of the outcomes should be made available to the relevant organisations, especially concerning fault lines. Fault lines came up as an unexpected theme from the very first interview onwards, especially amongst police interviewees. Exploring this concept further and widening participation in the range of the interviewees approached would lead to a more rounded insight into the issues facing both search professionals and homicide investigators.

Gathering more consistent data on body deposition sites, by visiting relevant locations, noting especially potential landmarks and gathering track offset data, would allow for either retrospective analysis of sites as well as future comparison of body deposition sites in relation to winthroping or reference point search.

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APPENDICES

Ethical approval and Research Data Management Approval for this research and its various strands was sought through Cranfield University CURES system and approval was granted in 2015. Also included in Appendix A is the Research Data Management Plan, which, although not compulsory, was undertaken to ensure correct procedures were followed. The appropriate training for the General Data Protection Regulation was undertaken with Cranfield University.

All participants were given either verbal and/or written information regarding this research, how to contact the supervisor, their right to anonymity, their right to not answer questions and withdraw from the study at any point. To maintain the level of anonymity required no forms were signed but an example of the information provided to potential participants is given in Appendix D.

Appendix A

A.1 Ethical approval & Research Data Management

A.1.1 Ethical approval through CURES

CURES applications approved:

CURES/647/2015 Level 2 risk – submitted 27/10/2015 - approved 09/11/2015

CURES/655/2015 Level 2 risk – submitted 30/10/2015 - approved 13/01/2016

CURES/788/2016 Level 3 risk – submitted 27/01/2016 - approved 09/03/2016

CURES/789/2016 Level 1 risk – submitted 27/01/2016 - approved 27/01/2016

CURES/790/2016 Level 3 risk – submitted 28/01/2016 - approved 17/02/2016

A.1.2 Research Data Management

Data management plan

Name: Tanja Conway-Grim

Project title: Search and location of body deposition sites: the role of winthroping and other innovative approaches

A.1.3 Data collection: types, formats, and capture methods

Interviews: interviews in person, by telephone, email – textual & audio. Analysed through NVivo

Training data: duration of training, number of trainers, CPD requirements, number of participants, topics covered.

Distance data: numerical from published research from CATCHEM & KSTAT, AIR, and ISRID.

A.1.4 Data documentation and metadata

Readme file

Questions that are used as part of the semi-structured interviews

Distance data is in spreadsheets and clearly labeled

A.1.5 Ethics and intellectual property/licensing

Due to the sensitivity of the subject and the jobs of the participants (within the police, military and counter-terrorism world) total anonymity was given to all participants unless they specifically stated they did not mind their names being used.

To preserve anonymity no consent forms were used. Instead, people were contacted either in person, by email or by introduction. They were offered an opportunity to participate, read 'their' part before submission if they wished,

withdraw at any time and be totally anonymous. They were given supervisor's name and contact details.

Implied consent was assumed by responding to questions. Several times participants could not answer questions due to security risk/confidentiality. At no time was pressure put upon the participants to answer questions. They were asked if they were happy to be asked any further questions if needed. All were happy to do so.

They are only identified by their professional role: i.e. PolSA 1, RESA 3.

Any data that will be made available will have a CC-BY license as per University recommendations.

A.1.6 Data storage during the project

The data is stored within NVivo, Audio Notetaker, and a folder entitled: MSc by Research. Within the latter folder, there are separate folders that deal with literature, interviews, writings. There are separate folders for the different strands of the research: SAR, Police, Military, Homicide etc.

The data is stored on 2 external HDs, which are encrypted. Data is transferred to the HDs at the end of each session.

All MS Office files are password protected.

Originally the laptop was encrypted by Cranfield, however, this led to a terminal IT issue leading to significant loss of data, hence the above solution.

All personal data will be removed from the HDs and laptop upon completion of the project to ensure the safeguarding of the data. To provide adequate protection for the data, all data was backed up daily onto 2 separate external hard drives, kept in hard protective covers. These HDs were kept in 2 physically separate places. After consultation with Gary Dooley (Cranfield IT security specialist), it was decided to encrypt the laptop used for academic work. This was executed by Paul Newman of CDS IT.

However, as soon as a software update was executed it became apparent that this was a terminal error as the encryption refused to allow the software to update resulting in a 'continual error loop'. The laptop had to have all its data wiped and be restored to factory settings. This meant a hefty bill as well as sourcing and re-installation of all software.

Subsequently, files were individually locked by password and sensitive email correspondence was done through password-protected attachments. In an ideal world the laptop should have been encrypted throughout, but as the laptop was not supplied by Cranfield University, the hands of the Cranfield IT specialists were tied. This is, however, an important issue that will need addressing in the future.

A.1.7 Data preservation

Personal data will be destroyed; however, the edited version of the data may be repositied and made available.

Distance data will be made available.

Data will be submitted to CORD repository. Permission to be sought from Georgina Parsons.

Time frame: data will be deposited within 6 months of thesis submission.

A.1.8 Data sharing

Other researchers within the field of missing people, search techniques, search and rescue, search and location of body deposition sites may be interested.

Research is published on the Research Map of the College of Policing. As soon as the research is completed it will be removed from the Research Map and will be moved to the College of Policing National Library if approval is given.

Only edited data will be made available as the identities of the interviewees must be protected. Distance data will be made available.

Appendix B Training undertaken

Lowland Search and Rescue:

Lost Person Behaviour

Lowland Search Technician

Navigation

Point of Find

Tracking

Search Planner

Search Operations

Team Leader

SARMan

CPD

Police:

PolSA

LSO - theory

CPD

Cranfield University:

Investigation and Evidence Collection

Recovering Buried Remains

C-IED

Fieldwork Safety

Relevant day courses such as: working with long documents and proofreading

TEEX:

Death Investigation

Scenes examination

Other:

First responder training

First Aid (3 days course)

Food Safety Level 2 & 3 (Level 2 is a minimum requirement for LSOs and PoISAs)

Awareness of Mental Health course Level 2

NVivo training with QSR International; 'Fundamentals of NVivo' and 'NVivo Moving On'

Military tracking

Dog tracking

Dog area search

Observational experience:

SAR

Police search for missing body (non-suspicious) following a cold case review

Police search for drugs in domestic premises

Police search for weapons in garden

Dog tracking

Dog area search (air scenting)

Victim Recovery Dog search

Appendix C Training

C.1.1 Police Search Advisors

Police Search Advisors are trained at the Police National Search Centre. Training is by invitation only. Applicants must have trained as a Licensed Search Officer (LSO) first and have a minimum of 3 years of experience of working as such.

The original training was initiated after the Brighton Bombings in 1984, when it was realised that the local police was lacking in the appropriate search capacity to deal with terrorist incidents. A RESA (Dr John Wyatt) and 2 police officers from Northern Ireland set up a 1-week training course in November 1984 to train the police in counter terrorist search methods. Originally this training was only available to higher ranking officers, sergeants and inspectors (Wyatt, 2017) (PoISA 4), but it is now open to officers of all ranks. As a PoISA is an advisor rather than a SIO (inspector and above), it was felt that there would be less conflict of rank incompatibility if the PoISA was a PC (PoISA 4). Opinion is divided upon whether this is, in fact, the case (PoISA 3, 4, 5, 6, 7).

The training was a 3 weeks residential course with 2 weeks concentrating on CT search and 1 week on crime scene search and missing persons search, which in reality equated to 2 days crime scene search and 2 days missing persons search, with the final day (which is only half a day) given over to evaluations, awards ceremony and farewells. It is now a 4 weeks residential course; 2 weeks focussing on planning for counter terrorism offensive and defensive searches, 1 week on crime scene searches and 1 week on missing persons searches (PoISA 8, SAR 1).

PoISAs do not normally conduct a search themselves; they advise a SIO on a search strategy and search planning and can recommend certain types of searches. They are responsible for training their local LSOs. They have access to online training and ongoing support through the online PolKA community, which is only accessible to appropriately trained, licensed and operational police officers. Once operational a newly qualified PoISA will normally initially be

partnered/mentored by a more experienced PolSA. There are currently around 660 PolSAs in the UK.

C.1.2 Police Search Skills

Police base their search approaches upon the 'Grampian' guidelines, developed by Gibb and Woolnough (2007) and iFind data (2015), which was developed by Dr Naomi Eales and launched by the MPB. In the search for missing persons the police will utilise a system called Compact which is a standardised app to record details of a missing person. The MPB utilises HERMES, whilst Thames Valley Police (TVP) has developed its own multi agency version called ELPIS (Detective 1).

In the PolSA Manual (2015) it is recommended that PolSAs are aware of field craft skills, but these are not taught. It is up to the individual to acquire these field craft skills. It is recommended that PolSAs are able to interpret maps, but again this is not taught apart from one short session during the initial course.

C.2 Lowland search and rescue training

Within the UK lowland search and rescue is overseen by the Association of Lowland Search and Rescue (ALSAR), now known as Lowland Rescue (LR). SAR is made up of 35 teams, with a total of 1694 volunteers, including 121 search managers (correct data on September 2016), whom are available 24/7 and work directly under the primacy of the police or Maritime and Coast Guard Agency (MCGA). These volunteers are highly trained and professional people who are passionate about finding vulnerable missing people. In 2016 they spent 40,000+ hours searching for vulnerable people covering over 82,792 km² of woodland, moorland, towns, cities and farmland.

When the police contact the duty search manager he or she will 'call out' the team and a Rendez Vous Point (RVP) will be given. Upon arrival at the RVP searchers sign in and state till what time they are available. This will give the Search Operations or Search Manager an idea of available resources. Search teams are formed based on a case by case basis depending upon capabilities and experience. On a call-out the team will be divided into smaller teams of 4-5

members, known as search technicians, and a team leader. Members within the team will be assigned specific roles such as comms, first aid, navigator et cetera. These roles will change for each training scenario and actual call outs, so all team members become confident and competent in each role. All competencies necessary to be a search technician are logged into personal log books, ensuring a nationwide standard in lowland search competencies and intra- and inter-team compatibility, which is important as teams will often assist each other across county borders with difficult or protracted searches. SAR teams are under the primacy of the police (as illustrated in figure 5-3) or MCGA, depending upon the jurisdiction of the land the incident occurs on.



Figure C-1 Hierarchy and lines of communication in SAR

To become a member of a SAR team, a prospective member has to pass a fitness test and police check, as well as undergo a probationary period. They are expected to attend fortnightly team training and undergo ALSAR training, delivered either locally by the unit, regionally by UKLSI or nationally through ALSAR

workshops. Equipment, training, accommodation and travel expenses are met by the volunteers.

C.2.1 Search approaches in lowland SAR

Lowland SAR bases their search techniques upon data gathered and analysed over decades; ISRID data, Grampian data, Centre for Search and Research data, AIR and now their own ongoing live search data KSTAT (KSTAT, 2018). These are used to inform the appropriate search approaches for different categories of missing people.

This approach can inform searches for instance when someone has been missing for several days and there may be pressure to call the search off. If the statistics show that the survivability of a person in that specific category is actually at 80%

even after 96 hours, there is justification to continue searching. Koester reports an example of such a successful case in Lost Person Behaviour (2008).

SAR uses a range of analytic techniques to inform their search approaches; from Probability of Area (PoA) which describes the likelihood of a missing person being in a particular area, Probability of Detection (PoD), AMDR, sweep width and search theory. However, these are not normally taught in depth as they can be mathematically challenging and are generally used by senior search managers, data analysts and researchers. Within the general SAR training as described below an awareness of the above will be given and certain techniques will be taught to estimate sweep width in particular.

C.2.2 Lost Person Behaviour

Lost person behaviour (LPB) is a syndicated course, based on the book Lost Person Behaviour by Robert Koester (2008). In the UK it is exclusively taught by UKLSI and uses global statistics gathered from SAR groups to give guidelines and indicators to the behaviour of lost and missing people. It describes different categories of missing and lost people (such as hikers, hunters, despondents, children, people with mental health problems), investigative questions to ask and based on the ISRID statistics indicates where such people have been found in the past, but see (Perkins, 2012) for a discussion on the accuracy of the data. An example is shown below. LPB also introduces the concept of attractors, deflectors, the bike wheel, all of which are also being taught (though more in-depth) on the search planners' course.

A male despondent is missing. He lives in a temperate climate in a rural setting. He has been missing for 2 hours. Using the ISRID statistics the following data would apply:

Distance (horizontal) from the IPP (in miles)		
Temperate climate		
	Mountain	Flat
n	103	193
25%	0.2	0.2
50%	0.7	0.5
75%	2.0	1.4
95%	13.3	10.7

Elevation (vertical) change from the IPP (in feet)			
Temperate climate			
	Uphill	Downhill	Same
%	31%	36%	33%
25%	40	30	0
50%	45	55	2
75%	396	100	5
95%	794	285	20

Mobility in hours	
Temperate climate	
n	38
25%	0
50%	2
75%	5
95%	20

Find location (in %)	
Temperate climate	
n	337
Structure	26%
Woods	25%
Water	15%
Road	12%
Drainage	8%
Field	6%
Linear	6%
Rock	2%
Brush	1%

Survivability	
Wilderness	
Uninjured	50 %
injured	15 %
Fatality	36 %
No trace	n/a
Alive after:	
<24 hours	75%
>24 hours	43%
>48 hours	32%
>72 hours	19%
>96 hours	11%

Track offset (in metres)	
n	18
25%	30
50%	50
75%	100
95%	275

The distance travelled from the IPP in a flat environment: 25% would be found within 0.2 mile from the IPP and 50% within 0.5 mile. The dispersion angle is likely to be 3°, and the elevation angle is divided nearly equally between uphill, downhill or the same. The location where he is most likely to be found is a structure (26%), in the woods (25%), in water (15%) or on or near a road (12%). 25% of males in this group are found within 30 metres of the track. There is a 75% chance of being found alive within 24 hours and a 50% of being found uninjured. This can help inform a search plan and the appropriate search techniques. Within the UK the Grampian data are also used, as well as the new iFind data. Within SAR small cards are made as 'aide memoires' with the most common categories of missing people and 'find locations', distance travelled, track offset et cetera, to provide a quick reference guide to searchers and planners.

C.2.3 Search Operations

Search Operations is a course for experienced SAR team members who would like to become more involved in search management. It is a weekend course taught by highly experienced SAR managers. Search Operations is concerned with the allocation of resources during a search; such as foot teams, dog teams, bike teams, water teams, UAV team. Search Operations teaches a SAR member to be part of the search management team and how to deploy SAR assets effectively. SAR management have control over LSTs, TLs, dog teams, bike teams, kayak teams, bank teams and the UAV team and are in charge of allocating the appropriate resource to a location. Search Operations works alongside Search Planner to provide effective search management in conjunction with the police. Search Operations and Search Planner can be done by the same person although that is more unusual due to the stress and responsibility of both roles. Search management are the only roles within a LR team to communicate directly with the PolSA.

The course teaches the understanding of the Incident Command Structure and how it involves the functions of command and the responsibilities associated with each of these functions. This structure allows the framework to be scalable from simple to complex dependent upon the needs of the search operation. Emphasis is placed on making decisions based on facts and statistics (CSR, Grampian, iFind, ISRID and KSTAT) against formulated search plans. Decisions are logical and justifiable, whatever they are, and deployment is managed effectively. All decisions are recorded in specific search documentation.

C.2.4 Search Planner

The Search Planner course presents a framework for the logical and systematic process for managing the search – and is concerned with establishing the facts such as point last seen, route taken, vehicle/transport details, clothing, description, mental/emotional state, vulnerabilities and predicting where the missing person may have gone. The search planner can then build scenarios of what may have happened to a missing person and then allocate areas to be

searched to the appropriate teams with the help of the search operator. The search planner/manager is also in contact with the PolSA. It is not uncommon for the Search Planner to work from home as it is not necessary to be on site.

Search planning uses a 6-step process:

Step 1 – Collect information and make the initial critical decisions (IPP, missing person type, terrain, map marking, attractors (reflectors) and statistical distances

Step 2 – Generate scenarios. What might have happened to the missing person given the information you have or can get.

Step 3 – Write a search plan and tasks that address each of your scenarios.

Steps 4 – 6 are about preparing to deliver the plan (resources, briefing/debriefing and the planning cycle)

Both Search Planners and Search Operations, when present on RV site will normally be based in a specially adapted vehicle, which has mobile extendable antenna for communications with the teams, computers, maps, printer et cetera. They are not allowed to be disturbed by ordinary SAR team members as full focus is needed on planning scenarios and allocation of resources.

The course focuses on separating Search Planning from Search Operations as these are two distinct roles. This also fits neatly into the ALSAR strategy to develop a Search Manager certification based on Search Planning and Search Operations skills and complies with existing ALSAR guidance.

The 3 main types of missing person statistics in use today are discussed; ISRID, CSR and Grampian and the pros and cons of all three are discussed within the course. This involves the use of bike wheel model techniques in Step 1, however, the overriding difference is the emphasis on building scenarios and writing plans to address them in Steps 2 and 3. The emphasis is on making decisions based on facts, statistics, behaviours and scenarios where decisions should be logical and justifiable. Throughout the course search plans are written and delivered in a logical order, based on plausible scenarios created from the information

collected from the missing person reports, available intelligence, statistics and missing person behaviour traits.

The course also covers documentation of the search, when to end searching and how to close the search, including completing paperwork and submission of statistics.

C.2.5 Search Manager

Once a SAR volunteer has undertaken both Search Operations and Search Planning training and successfully passed all the tests and exams, they are then eligible to apply to become a search manager, an accredited *Skills for Justice Level 4* qualification. Although theoretically a search manager can fulfil both roles, in reality the roles are normally split due to the intense pressure of both roles when operational. Both Search Operations and Search Planners are usually based either at home or in a dedicated vehicle with long range antennae, computers et cetera. Search technicians are not allowed to enter the vehicle or come near it as the search manager/planner/operations cannot be disturbed. The search manager will normally be in regular contact with the PolSA and with the team leaders.

C.2.6 Further available SAR training

Local teams may provide specialist training such as canine teams, bank teams, swift water teams, UAV teams, side scan sonar teams, kayak teams and bike teams; for the purposes of this research no specific specialist training was undertaken, although all were either experienced, observed or demonstrated during national training workshops and local training events. The specialist water teams are called upon by the police in cases of a missing person in a lake, when there is flooding and people need to be evacuated. At this point the SAR teams really come into their own as they are a highly trained, experienced, self-contained unit, come with all the equipment they need and are used to working under pressure. In recent years the SAR teams have been regularly seen on the national and regional news whilst they were helping out with evacuating people after extensive flooding all over the country.

Appendix D Sample email and sample questions

Dear ...

My research is entitled: 'Search and location of body deposition sites: the role of winthroping and other innovative approaches'. It is aimed specifically at 'no body' homicides in more rural/parkland settings.

It is part of an MSc by Research at Cranfield University, Cranfield Defence and Security and my supervisors are Dr. Matt Healy (m.j.f.@cranfield.ac.uk) and Peter Masters (p.masters@cranfield.ac.uk).

As part of my research I am interviewing people who are or have been involved in search and search techniques, police, military, civilian (search and rescue) etc.

I have undertaken training in lowland search and rescue, tracking, canine search, and will be heading to the College of Policing next week to undertake PoISA training.

I would be very interested in being able to ask you some questions about search and search techniques in general and especially in relation to body deposition sites. I am aware that within the ... area BDSs are normally within domestic premises/on the street and as such not entirely applicable to my research, but the general approach is still useful to my research.

If you are happy to participate (I do offer complete anonymity for interviewees if required) or know of someone else who may be, I can send questions by email to any address or conduct an interview in person, whereby I am happy to travel to a place of choice.

Kind regards,

Tanja Conway-Grim

(mobile number)

Establishing clear communication and definition of winthropping:

How would you define winthropping?

Tell me more about winthropping, now referred to as reference point search?

Interviewees' experience of winthropping in order to weight their response:

What is your personal experience of winthropping?

Have you used it yourself on active duty?

How effective have you found winthropping?

How were you trained in its use?

Do you adapt it to the local environment?

Interdisciplinary use of winthropping and transferability of search techniques:

In what situations would you use winthropping?

Apart from arms caches and EODs, what other uses can you think of for winthropping?

In your work abroad how relevant is the technique of winthropping in different theatres?

Do you see a role for winthropping in BDS search and location?

Do you see a role for winthropping in the search for suspicious mispers?

Miscellaneous questions:

How would you approach a suspicious misper search?

In your experience is there a difference in BDS between 'spontaneous' and serial/premeditated killings?

Do you think there is a change of roles or responsibilities of the PoISAs & police search with the current trend of PC PoISAs?

Appendix E Conferences, symposia, expositions and seminars attended

Search and Rescue conference at College of Policing (Bramshill) 4-6 October 2014

C2 Symposium at Tidworth 24 March 2015

Inaugural Female Researchers Network (FeRN) Conference at Cranfield University main site 3 June 2015 – finalist in a student poster competition

Inaugural Forensic Science in Defence and Security Conference 17-18 September 2015 at Cranfield University

Defence and Security Doctoral Symposium 25-26 November 2015 at Cranfield University

PolSA CPD Event at College of Policing (Ryton-on-Dunsmore) 17-18 December 2015

Defence and Security Conference in September 2016 at Cranfield University

Missing Persons conference Cardiff August 2016

Missing People conference Dundee June 2017

Lowland Rescue Conference Milton Keynes September 2017

DSDS November 2017 – finalist in the student poster competition

Appendix F Ethnographic data

Full ethnographic data of interview participants for qualitative data chapter

The final column in the table Comm stands for Communication method, E means email, P means in person and T means by telephone.

Role	Code	Gender	Experience in years	Age	Country	Rank	Year	Comm
PolSA	PolSA 1	M	30	50s	UK	Inspector	2013	E
PolSA	PolSA 2	M	30+	50s	UK	PC	2013	E
PolSA	PolSA 3	M	28	40s	UK	Sergeant	2016	P
PolSA	PolSA 4	M	30	50s	UK	Superintendent	2014/15	PET
PolSA	PolSA 5	M	15	40s	UK	Sergeant	2015	PET
PolSA	PolSA 6	M	23	40s	UK	Chief Inspector	2015	PET
PolSA	PolSA 7/SIO 4/SAR 6	M	25	40s	UK	Chief Inspector	2018	PET
PolSA	PolSA 8	M	28	50s	UK	Sergeant	2015/17/18	PE
PolSA	PolSA 9	M	25	40s	UK	Sergeant	2015	P
PolSA	PolSA 10	M	26	50s	UK	Sergeant	2015	P
PolSA	PolSA 11	M	15	40s	UK	PC	2015/17	PE
PolSA	PolSA 12	F	20	40s	UK	PC	2015	P
SA	SSA 1	M	30+	50s	UK		2018	E
SA	SSA 2	M	30	50s	UK	Chief Inspector	2018	E
SA	SSA 3	M	20	40s	UK	Inspector	2017	P
RESA	RESA 1	M	30	40s	UK	n/k (military)	2014	P
RESA	RESA 2	M	50+	70s	UK	n/k (military)	2017/18	P E T
RESA	RESA 3/ Tracker 3	M	25+	40s	UK	n/k (military)	2017/18	ET

Role	Code	Gender	Experience in years	Age	Country	Rank	Year	Comm
REST	REST 1	M	10	20s	UK	TL (military)	2017	P
SAR	SAR 1	M	30	60s	UK	SM	2015/16/17/18	PET
SAR	SAR 2	M	15	40s	UK	SM	2014/15/16/18	PE
SAR	SAR 3	M	15	50s	UK	SM	2015/17/18	PET
SAR	SAR 4	F	15	60s	UK	SM	2014/15/16/18	PE
SAR	SAR 5	M	12	40s	UK	TL	2015/16	P
SAR	SAR 6	M	4	40s	UK	LST	2018	PET
Police	AusPol 1	M	30+	50s	Australia	Chief of Police	2018	P
Tracker	Tracker 1	M	25	50s	UK	Officer Commanding (military)	2015/2016/2017/2018	PET
Tracker	Tracker 2	M	25	40s	NL	n/k (military)	2015	E
SIO	SIO 1	M	25	40s	UK	Inspector	2017	ET
SIO	SIO 2	M	30	50s	UK	Inspector (Rtd)	2015	PE
SIO	SIO 3	M	30	50s	UK	Detective Superintendent	2018	PT
SIO	SIO 4/PolSA 7/SAR 6	M	25	40s	UK	Chief Inspector	2018	PET
SIO	SIO 5	M	42	60s	UK	Detective Superintendent	2018	PET
Detective	Detective 1	M	30+	50s	UK	Senior Manager	2017/18	PET
Detective	Detective 2	M	30+	60s	UK	Senior Manager	2017/18	PET
Analyst	Analyst 1	M	20+	40s	UK	Research Fellow	2016/17/18	PET
Security	Security 1	F	15+	30s	UK	Assistant head of iconic building security	2016	PE

Role	Code	Gender	Experience in years	Age	Country	Rank	Year	Comm
MPB	MPB 1	F	15+	40s	UK	Analyst	2018	PE
DSTL	DSTL 1	F	10	30s	UK	Dr/Researcher	2018	PE
FA	FA 1	M	20+	40s	UK	Dr/Forensic Archaeologist	2013/14/15/16	PET
FA	FA 2	F	20+	40s	UK	Dr/Forensic Archaeologist	2015	P
UAV	UAV 1	M	15+	60s	UK	n/a	2015	PE
Forensic geologist	FG 1	M	20+	50s	UK	Dr	2015/17/18	PE
Search specialist	SS 1	M	40+	50s	UK	Dr & Fellow (military)	2015	PE
Search specialist	SS 2	M	35+	40s	UK	2 nd CO (military)	2017	PE
Search specialist	SS 3	M	30+	50s	UK	Parachute regiment, search lecturer & practitioner	2018	PET
Forensic Psychologist	FP 1	M	30+	50s	UK	Dr	2017/18	PET
Forensic Psychologist	FP 2	M	30+	50s	UK	Dr	2015	PT
Police Manager	PM 1	M	40+	60s	UK	Senior Manager	2015	PET
Military search	MS 1	M	30	50s	UK	Lt Col (Rtd) (military)	2018	P
CC	CC 1	M	30+	60s	UK	Chief Constable (Rtd) (Police)	2018	PT
Dog Handler	PDH 1	M	29	50s	UK	PC	2015/16/17/18	PET
Dog Handler	DH 2	M	20+	50s	UK	n/a	2018	E
SARMan	SARMan 1	M	15+	40s	UK	n/a	2015/18	PE

Table F-1 Ethnographic data of interviewees

Appendix G Location Charts

Pre-search planning tool

DATE/TIME:			OPERATION:			POLICE FORCE:	
Locations	A	B	C	D	E	F	
Concealed							
Available							
Non-attributable							
Accessible							
Locatable							
Diggability (RAG)							
Feature points {Describe}							
Entry sign {Describe}							
Proximity to road/path							
Perpetrator's geographical association							
Perpetrator's historical association							
SCORE:							

Post search/discovery analysis tool

DATE/TIME:		OPERATION:		POLICE FORCE:
Location	Homicide site	Primary deposition site	Secondary deposition site {if applicable}	
Concealed				
Available				
Non-attributable				
Accessible				
Locatable				
Diggability (RAG)				
Feature points {Describe & note on map}				
Entry sign {Describe}				
Proximity to road/path (in metres)				
Perpetrator's geographical association (familiarity) {Describe}				
Perpetrator's historical association (familiarity) {Describe}				
SCORE:				

Table G-1 Location charts for body deposition sites

Appendix H Research background

There are two backgrounds that need to be mentioned here; the researcher's background and the research background.

The researcher originally started on a part-time taught MSc in Forensic Investigation and in January 2013 chose 'winthropping' (now mainly referred to as reference point search) in relation to body deposition sites as the topic for thesis research. The subject proved to be so fascinating and all-encompassing that eventually it was decided to abandon the taught MSc and convert to an MSc by Research instead in 2015, allowing total focus upon the subject.

The research background stems from the original supervisor's interest in reference points when locating body deposition sites, an interest developed during his collaboration with the police in his professional capacity as a forensic archaeologist. A number of PoISAs he worked with on forensics recovery cases, commented upon the fact a BDS was regularly found near what they classed as a winthrop point.

It was soon discovered that winthropping, search and rescue techniques, tracking and wayfinding were utterly captivating and fascinating and there were a lot of parallels between them. That is what has been most fascinating about this research; discovering the patterns and similarities between a wide range of techniques and approaches.

Appendix I Decision-Making Model

Below is the College of Policing's National Decision-Making Model (Policing, 2014) that police officers are supposed to use when making decisions. In reality, this is often not the case and decisions are made based on experience, personal or local/regional institutional preference.

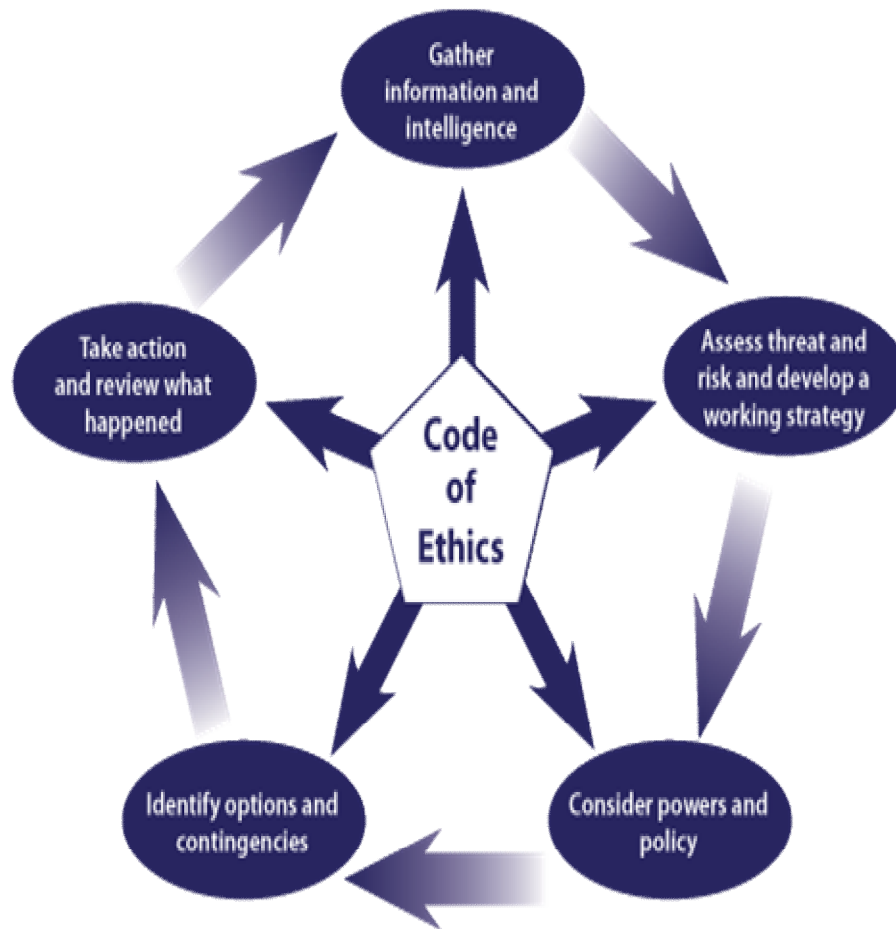


Figure I-1 National Decision-Making Model