**Kent Police**

# PredPol operational review – initial findings

**Restricted**

## Introduction
This document provides a quick overview of the background of Kent Police's evaluation of the PredPol tool, as well as initial findings from the preliminary PredPol deployment and PredPol day of action████████████

S.31

## Background
In early Spring 2012, the Chief Constable put together a team of two command staff and one crime analyst to travel to Los Angeles to gather information about the predictive policing being deployed there (PredPol). The Kent team met with Los Angeles Police Department commanding officers at the Real-time Analysis and Critical Response Division and Foothill Division and the researchers behind the PredPol process. The team evaluated the science and observed the day-to-day operation of PredPol. The team confirmed both the accuracy and crime-rate reduction information experienced by LAPD, as well as uptake in day-to-day usage by officers. These factors were reported to the Chief Constable, which was followed by a web briefing delivered to Kent command staff by PredPol scientists in late spring 2012. The Chief Constable made the decision to move forward with a phased deployment with regular evaluation.

The technical setup process proceeded in two stages. First, the Kent Analysis team identified key crime types to be the focus of predictive policing and worked with PredPol to develop the necessary data structure. Second, a Kent-side data server was established as an intermediate node between the Kent records management system and PredPol cloud-based servers. The Kent IT department then worked with PredPol to install a live data pipe that pushes data from Kent to PredPol on a daily basis.

The Chief Constable mandated a phased rollout of PredPol with regular evaluation. The first six-month phase involved a live deployment of PredPol in North Division and a silent test of predictive accuracy in West Division. Pending positive evaluation, the second phase would see rollout of PredPol for live deployment in both West and East Division. The deployment process for North Division involved a week-long series of information sessions held for all North Kent officers followed by live deployment. Autonomy was given to North Kent Division command staff and supervisors to direct their resources as they deemed necessary and, critically, that officers were to use their discretion to police what they see when using PredPol.

To evaluate the PredPol deployment, the Kent Analytical team collected data on the silent test in West Kent and the live deployment in North Kent. The silent test in West Kent was a controlled experimental design. An analyst used an intelligence-led policing process to identify on a daily basis 80 predicted crime locations divided equally among day- and night-time shifts at two districts (Sevenoaks and Maidstone). PredPol independently deployed 80 predicted crime locations in the same manner. Only the Head of Analysis████████████had access to both analyst and PredPol predictions. The target of the evaluation was whether PredPol can predict more crime on a routine basis than the Kent boxes using existing best practice.

The evaluation of the North Kent live deployment focused on three measures. Crime incident data was collected to evaluate the impact of PredPol on crime volume. Event narratives were collected to evaluate the operational context of predictive policing. Anonymous surveys and interviews were conducted to evaluate the day-to-day level of use and the impressions formed by officers over the deployment period.

## Evaluation and Benefits

*Primary benefit:* **Reduction in crime and ASB.**[1]

A weekly time series analysis was used to monitor crime at North Division. Initial findings indicated that there had been an impact on street violence at North Kent. Taking account of environmental, economic and social factors, the review showed a different pattern for street violence, compared to West and East divisions. During the 4 month trial period North experienced a 6% reduction in street violence.

Following this a 4% reduction in all crime was observed towards the end of the pilot. Again taking account of environmental, economic and social factors the data showed a differing pattern for North Division all crime, compared to West and East divisions. This continued beyond the pilot and is currently being monitored as part of the Force wide evaluation.

*West Kent experiment*

A silent test experiment was carried out at West Division to understand how effective PredPol is at predicting the location of crime. The experiment followed an internationally recognised method.

Predpol boxes were deployed in West Division at Sevenoaks and Maidstone. Kent boxes were also placed at the same locations over the same time period. Both were placed in isolation of each other.

Both sets of boxes were then tested by the Kent Analysis department and PredPol, against crime that had taken place in Maidstone and Sevenoaks over the same time period. A hit score was produced for both (Table:1).

**Table: Preliminary hit scores**

|  | Hit Score | Boost |
|---|---|---|
| **PredPol** | 8.47% | 1.594 |
| **Kent** | 5.31% | |

These preliminary results show that predpol scored a higher hit rate. Therefore, it is more likely to predict the location of a crime than the Kent boxes. PredPol achieved a boost of 1.594, which means it is 59% more likely to predict the location of a crime than the Kent boxes. Importantly, the effort involved for the analyst to achieve the observed predictive accuracy was considerable, involving between two and four hours per day of research and task design. Use of PredPol therefore liberates the analyst to work on intelligence-led tasks.

*Officer feedback*

Officer feedback was obtained using focus groups and an online survey. Feedback from North Division was mixed in terms of perceived benefits. This was expected given that North Division was the first to use PredPol at Kent and the UK. The two comments below provide a good summary of general perceptions.

1. *'Predpol has given me the opportunity to engage with the public and business community, as well as act as a deterrent to undesirables by being more visible on a regular basis.'*

---

[1] Due to technical difficulties it has not been possible to use ASB data during the trial. ASB data will be available once full rollout across the force has been completed.

2

An analysis of event narratives highlighted opportunities to disrupt crime and arrest prolific offenders, as well as prevent crime and engage with the public. There was general consensus amongst officers that the approach taken around PredPol was sound. Officers largely appreciated Kent's organic approach, which does not stipulate the use of PredPol nor attach any performance criteria to activity in the zones. 'Use PredPol during patrol time, get in the zone and police what you see', was the message put out by the Force.

More narratives will be collected during the next phase of deployment at West and East division.

**Conclusion**

These results indicate that PredPol provides a more accurate prediction for crime location. There is also evidence which indicates a further reduction in crime where PredPol has been deployed. Feedback from officers is encouraging and event narratives point to emerging benefits around stopping and preventing crime and increased public engagement.

A full review of PredPol in Kent will be completed at the end of this year. Emerging analysis is indicating that there will be value in assessing Force process and practices, to enhance predictive policing over the coming months. Particularly around intelligence lead policing and demand management.

Based on the evaluation of the silent deployment in West Kent and the live deployment in North Kent, the Chief Constable made the decision to deploy PredPol live to the whole force on April 29, 2013. The force-wide rollout was preceded by a week of information sessions for West and East Division officers and staff. The importance of such information sessions should be emphasized. The initial week of force-wide deployment saw officers embracing the concept more completely than had been the case in North Kent, which we attribute to the transparent presentation of results of the North and West Kent trials. The initial week also saw prominent arrests that the officers involved attributed to the opportunities created by PredPol.

The Chief Constable has described PredPol and the model of deployment used by Kent as "21st Century technology meets traditional policing." The scientific basis of PredPol has been confirmed. Careful evaluation will continue during the period of force-wide rollout.

The next section of the report provides an analysis of ▮▮▮▮▮a PredPol all out day where 95 officers from across the Force were deployed to predictive policing. These were not additional resources but re-brigaded from those officers on duty on the day.

S.31

ALL S.31

## Introduction
This section provides an analysis of the PredPol day of action,████████All data runs to the 15/09/13.

## Background
On the 14th August the Force engaged in an all-out PredPol day.████████Dosage (time spent in PredPol zones) was a priority for that day and approximately 95 officers where engaged in PredPol zones across the county.

A total of 17 arrests were highlighted throughout the day as a result of patrolling PredPol zones. 506 zones were visited equalling 223 policing hours. For further details on this and officer experience see appendix A.

## Results
████has been monitored using the evaluation techniques employed at the North Division pilot and the subsequent Force wide rollout. This involves monitoring crime on a weekly basis using SPC charts to identify any changes and trends.

*All Crime:* The two weeks post████saw a downward trend for all crime across the Force (figure 1). This equates to a 4% decrease compared to the same two week period prior to████ and suggests that an affect has taken place post████When taking account of the various factors associated with crime it is reasonable to surmise that the increased dosage resulted in the disruption of criminal activity.

*Violence, criminal damage:* Similar trends where seen for violence and criminal damage (Figure 2). This again suggests that targeting boxes at this dosage rate has impacted on these crime types. Both saw a residual effect between 12 - 14 days post ████before a rise took place.

*ASB:* The two weeks post████saw a downward trend for ASB across the Force (Figure 3). This continued for 14 days before returning to the previous rate. Another drop has occurred very recently, this will be due to the start of school terms.

*Other crime types:* A short increase in drug offences took place post████This was expected and represents proactive policing activity. Interestingly, an increase in vehicle crime was observed and a drop in burglary 6 days post████ Whilst it is unclear why vehicle crime rose, the decrease in burglary may suggest a delayed disruption in criminal activity. Criminals saw more police on the street which changed their behaviour. This will be closely monitored.

## Conclusion
Findings show that an increased dosage for one day in Kent has disrupted criminal activity across the Force for up to two weeks. This was also seen in Force recorded figures, but has not been enough to stop the overall upward trend for victim based crime in Kent. However, the analysis of this day indicates that the use of PredPol disrupts criminal activity and reduces crime. This was most prevalent in non-acquisitive crime, although there are suggestions that████may have had an effect on burglary.

4

This adds further evidence that the sustained use of PredPol over time should disrupt criminality and reduce crime. ███████████████████████████ S.31
Another evaluation will take place and the results will be compared against crime and the results shown in this report.

Pages 6 through 9 are exempt from release by virtue of Section 31(1)(a) of the FOIA relating to Law Enforcement

# Appendix A: Predictive Policing – Day of Action
## 14ᵗʰ August 2013

**Kent Police**

**Date:** 16/08/2013
**Customer:** ███████████████████
**Author:** ████████████████ Central Analyst
**Handling Instructions**
This document is classified as **RESTRICTED**
Neither the report nor its contents may be disseminated outside the distribution list without the prior agreement of the Customer or Authorising Officer.

## Introduction

On 14ᵗʰ August 2013 Kent Police participated in a global Pred Pol day of action along with our American colleagues to demonstrate the benefits and successes that Predictive Policing can bring to the force. A number of resources were dedicated to this███████████████████ ██████████████████ran from 8am to 8pm and there was a dedicated day team and a dedicated late team. All teams were given a briefing and instructed to spend as much time entering various Pred Pol zones on foot throughout their shift and report their findings back to Silver Command based in the FCR. Police officers from neighbourhood and Tac Ops, PCSO's, Community Wardens and other partner agencies such as KFRS all participated in███████████This document aims to cover some of the good work conducted by those teams who were engaged on████████ ████ and the positive results achieved. The data used to complete this report was collated 'live time' during the operation by a force analyst dedicated to████████████

S.31

## Arrests

- A total of 17 arrests were highlighted to Silver Command throughout the day as resulting directly from the patrolling of Pred Pol zones.
- East division reported 9 arrests, North division reported 6 arrests and West division report 1 arrest.
- There were various reasons for these arrests including offenders being caught in the process of committing a crime such as robbery, there were also drug and theft related offences and those who were wanted on warrant or found to be breaching their bail.
- A full list of those arrested and by whom can be found in Appendix A of this report however below are some examples of good arrests that took place as a direct result of patrolling in Pred Pol Zones.

S.40

████████████████was located in███████ Gravesend████████when he saw one male pursuing another male.████████████engaged with one of the males and discovered that he had just been the subject of a robbery.████████████detained and arrested the offender for robbery and a stolen wallet was recovered. S.40

Whilst located in████████████ Gravesend the passive drugs dog indicated on a male. This male was subsequently stopped and found to be in possession of cannabis.
S.40 ████████████arrested this male for possession of cannabis.

Whilst patrolling████████Ashford███████officers came across a wanted male. Officers were aware that this male was wanted for Burglary and had previous evaded Police and made off from patrols. Officers were able to detain the male and████████ ████████arrested the male.

S.40

S.31

*Whilst officers were patrolling* ███████ *Folkestone* ███ *they came across a male acting suspiciously. The male was searched and found to be in possession of what is believed to be Class A drugs. This male was arrested by* ████████████

S.31

S. 40

### North Division – Summary

- As mentioned above there were a number of positive arrests in the North division Pred Pol zones throughout the day.
- A full and detailed update on some of the activities carried out across the North division was provided and this can be seen in Appendix B of this document. Below is a summary of some of the activity that was carried out across the North Division.

- Officers patrolling the street often engaged with the community to discuss current issues and gather community Intelligence.
- Areas well known for street drinking were patrolled and a number of alcohol seizures were made.
- Various stop checks were conducted some of which as mentioned previously resulted in arrests.
- Community issues such as graffiti and rubbish that had been dumped in public places were also discovered and the appropriate partners were contacted and dealt with these issues swiftly.
- A 5 year old girl who had been reported missing was also located by patrols in the area.

### East Division – Summary

- As mentioned above there were a number of positive arrests in the East division Pred pol zones throughout the day.
- A full and detailed update on some of the activities carried out across the East division was provided and this can be seen in Appendix B of this document. Below is a summary of some of the activity that was carried out across the East Division.

- Police officers, PCSO's and community wardens engaged in high visibility policing throughout the day. There was a large amount of public engagement and members of the community reporting that they felt reassured by the Police presence. There was also regular contact between those out patrolling the streets and the CCTV operators in Canterbury City Centre.
- The activity of the Police and wardens was varied and involved dealing with suspicious incidents, Misper's, gathering intelligence and identifying areas experiencing ASB and graffiti.
- Advice was given to local licenced premises owners as well as shopkeepers who have recently experienced thefts. Any noise, litter and environmental health issues were immediately reported to the relevant partners to be dealt with as quickly as possible.
- Words of advice were given to local youths who were causing what may be perceived by some as a nuisance but there was also lots of positive engagement with young people in the area who felt they were able to approach the Police/Wardens and engage with them.

### West Division – Summary

- There were fewer arrests made in the West division when compared to other areas, however there was still a significant amount of community engagement across the division.
- Police officers, PCSO's and community wardens were all engaged in patrolling Pred Pol boxes throughout the day.
- A significant amount of community engagement was reported with some very positive feedback from the members of the public. The public welcome a more visible presence in their communities.
- Officers reported entering a Pred Pol box to patrol and immediately saw a group of youths acting suspiciously, when they saw the patrols they made off. The youths were detained,

words of advice offered and they were returned to their parents. Officer gave very positive feedback to Silver Control about how effective patrolling these boxes seemed to be.

### Rural Partnership – Summary

- The Rural partnership team also reported some positive feedback from patrolling the Pred Pol zones.
- Around 30 vehicles were stop checked in and around various Pred Pol zones in rural locations.
- ██████████ 3 warnings for no seat belts, 1 warning for no MOT and one warning for no road tax were completed.

### KFRS – Summary

- KFRS also engaged in ████████████ and reported directly back to Silver Command any incidents or information that they deemed to be relevant.
- Crew engaged in some public engagement and gave fire safety talks in Canterbury. They reported any discoveries of piled up/fly tipped rubbish to the relevant partner agencies to help prevent future fires.
- KFRS also engaged with a family that they believed were living in a location that was a potential fire hazard, they visited the premises and fitted smoke alarms and offered fire safety advice.
- Whilst patrolling a zone the crews reported also discovering a potentially stolen jet ski. The serial number was noted and passed to the Community Safety Unit to investigate further.
- Crew also engaged in leaflet drops in a number of Pred Pol zones during the day.

### Zones Visited – Summary

It is not possible to calculate how many zones were visited as in some cases patrols may visit more than one zone at a time and not book in and out of each zone. The "time in zones figure" below is calculated only when a patrol has booked into ████████ and out of ████████ of a zone. There is an issue with the current booking in and out of the zones, in some cases this is not always recorded correctly and therefore cannot be analysed accurately.

During ████████████ there were a total of 1219 visits to zones, however only 506 could be used to calculate the time spent in the zones. This is because 229 call signs were booked out of a zone but not booked in and 484 were booked into a zone but not booked out again. Therefore from the 506 that could be used, it was calculated that 222:39:08 hours were spent in Pred Pol zones.

### Conclusions

There were a number of good arrests made during ████████████ as well as a large amount of positive public engagement and support received. Both the Police and other partnership agencies worked well together to gather intelligence, provide public reassurance and discover what issues were affecting the local communities in and around the Pred Pol zones.

Page 13 is exempt from release by virtue of the exemption at Section 40(2) in conjunction with Section 40(3)(a)(i) of the FOIA relating to Personal Information

S.31

## Appendix B North Division

I had three teams out in Medway.

### P10
6 x S/C - █████████████
2 x stops
3 x vehicle searches
1 x call attended re insecure vehicle
1 x call attended re insecure house
1 x property check
Linked in with car park attendant from those car parks currently being hit.
13 Predpol Zones

### P11
S.40
1 x Arrest- ████████████ for a no bail warrant. After arrest and conveyance to custody they had to take him to court.
3x S/c, ██████████████████████.
2x Address checks/knocks on cat B addresses, no reply gained.
1x arrest request/warrant attempted, negative result
12 Pred Pol zones covered.

### P12
6 x Predpol zones covered.
Plenty of high Viz, but nothing of any real note
1 x S.23 search in custody
4x assisted stop checks.

### Gravesham

### Pred Pol – A
S.40
10:50hrs ████████████ was on foot patrol in ████████ Northfleet. Spoke to local Caretaker
S.40 – ██████████████ – gathering community intelligence and discussing crime prevention ideas for the local shop area.

### Pred Pol - M
S.40
11:35hrs - Following Passive Dog indication in ████████████ Gravesend, ████████ arrested ████████████████████ for possession of Cannabis.

S.40
### Pred Pol – F
S.40
1. ████████████████ on patrol in an area well known for street drinking – ████████ ████████ Gravesend
2. Graffiti (x 2 pics) identified by Officers in ████████████ Gravesend
3. Opposite ████████████ – Rubbish dumped – within 5 mins of Officer's attendance, the council arrived and cleared it.
4. Officers dealing with Town Centre Street drinkers.    S.40
5. Officers Stop Check of Town Centre regular street drinker - ████████████
6. Passive Drugs Dog identified suspect who, following a section 23 search, was in possession of a bladed article and Possession of Cannabis – ████████████████ arrested (Disposal not know at time of writing ████████████    S.40

**Pred Pol – M**

S.40

████████ – Passive Drugs Dog ████████ – Stop Check of 3 Males from North London following indication. Search of vehicle revealed a bag containing £400 cash. All known for drugs possession. Money was subsequently accounted for. ████████

**Pred Pol - G**

S.40                                   S.40

████████ – Stop Check of ████████ – Arrested - Wanted for handling stolen mobile phone – crime report ████████ (Disposal not known at time of writing)                     S.40

**Pred Pol – F**

S.40                                   S.40

████████ – arrested ████████ on suspicion of Robbery (Street). Seen by Police being pursued by IP. Wallet found on him that didn't belong to him. Significant Statement made. (Disposal not known at time of writing)

**Pred Pol – B into E**

S.40

Missing 5 year old girl – ████████ – went missing from ██ Gravesend subsequently found by Police ████████ through local knowledge.         S.40

**Appendix C**

**West Division**

**Canterbury**

We had a good turn out from our partners this morning for a multi-agency briefing ahead of our Canterbury Multi-Agency PredPol Day of Action - please find photo attached.

We deployed as follows:

High visibility police and PCSO patrol in Boxes A & B - well-known local youths spoken to and advised re. behaviour, sus. vehicle details obtained and broadcast, assisted search for vulnerable misper and dealt with a fire. Public engagement and reassurance.

High visibility KCC Community Warden patrol in Boxes A & B - noticed chalk marks on houses that are used to mark premises suitable for/vulnerable to burglary - intelligence re. this passed to Police Intelligence & Proactive Units, graffiti and pot holes reported. Public engagement and reassurance. Comment made that it was good to see wardens in this area - they would not have been there if it wasn't for PredPol.

Canterbury City Council CCTV system focussed on all Boxes in City and town centre areas

High visibility patrol by District Watch staff in Boxes J, K,M,N O & P - liaison with police re. recent thefts, advice given to local shopkeepers and attempts made to recruit new members

High profile KFRS deployment in Box M - fire prevention and road safety advice given. Public engagement and reassurance.

High visibility joint police and Canterbury City Council Enforcement Officers patrol in Boxes F, G, H, I, L, O, P, Q R and T - vehicle offences dealt with, assisted to eject male from shop

S.31

premises, intelligence gathered, advice given re. street drinking. Public engagement and reassurance.

High visibility joint police and Canterbury City Council Community Safety Unit patrol in Boxes F, G, H, I & J-Q - assisted search for vulnerable misper, High Risk ASB victim visited, dumped items of furniture reported for clearance, advice given to DPS at licensed premises, noise issue reported to Environmental Health, evidence of graffiti gathered, lots of public engagement.

Police plain clothes patrol in Boxes O, P M & J - focus on street drinking, begging, and shop theft

Canterbury City Council Environmental Health patrol of Boxes K, M, N, O & P - graffiti removed using graffiti wipes, intelligence gathered re. street drinking, advice given to busker with amplified music.

**Ashford**

Please see below our feedback with regards to ██████ (Ashford) from ███████████ S.40

As per Operational Order the PredPol boxes have been filtered to Daytime Violence only which are as follows:-

1527hrs-1555hrs - All 3 officers on foot patrol of box D and surrounding roads.

1555hrs-1632hrs - All 3 officers on foot patrol of box G and surrounding roads.

1646hrs-1732hrs - All 3 officers on foot patrol of box R including the play park/fishing pond. Whilst walking through the play park officers were approached by a group of girls stating that some boys being rowdy whilst fishing. Officers spoke with███████████████ S.40 ██████████████████. No offences and words of advice were given to the boys regarding their behaviour whilst in the area. ████████████

1732hrs-1748hrs - 2 officers on foot patrol and 1 officer on mobile patrol of box Q and surrounding roads.

1748hrs-1759hrs - 2 officers on foot patrol and 1 officer on mobile patrol of box P and surrounding roads.

1759hrs-1811hrs - 2 officers on foot patrol and 1 officer on mobile patrol of box O and surrounding roads.

1811hrs-1830hrs - Mobile patrol of box N and surrounding roads.

1830hrs-1845hrs - 2 officers on foot patrol and 1 officer on mobile patrol of box M and surrounding roads.

1845hrs-1901hrs - 2 officers on foot patrol and 1 officer on mobile patrol of box L and surrounding roads.

1904hrs - Mobile patrol of box K commenced. Whilst on patrol we have entered ████████████ at 1910hrs and sighted ████████████████████ entering this location on foot from ████████████ Officers were aware that ████████ was an outstanding suspect for Burglary

S.40  ████████ and had been evading police and making off for the past few days. Officers have stopped ████████ and arrested him for this crime report. He was conveyed to Folkestone Custody for Pro-Active Investigation to deal. ████████████

2200hrs - Bail check conducted on ████████████████████████████ S.40
████████ They were home and all in order. ████████████
Totals:

Arrests: 1
Stops: 4
Searches: 0
████████
S.32/S.18: 0

Arrests in predpol are
████████ 2 assault reports zone P
████ Assault Zone P
████ Wanted on Warrant Zone C
████ 2 Assault crifs zone G
████ shop theft Zone K
████ Poss class A Zone L  } S.40