CITY OF KALAMUNDA

WATTLE GROVE CELL 9 CCTV FEASIBILITY STUDY OCTOBER 2020

Background

The City of Kalamunda engaged Zenien to conduct an independent feasibility study into the placement of CCTV cameras at three key pinch-points for vehicular egress/ingress in the Wattle Grove Cell 9 area.

a) Corner of Welshpool Rd East and Bruce Road Wattle Grove
b) Corner of Welshpool Rd East and Hale Rd Wattle Grove
c) Corner of Tonkin Hwy and Hale Rd Wattle Grove

Zenien's remit was to look at a variety of factors that would directly influence if CCTV is a recommended strategy in the area (for the City) and if so, to design a CCTV solution suitable for a tender specification.

It is acknowledged that the Community has expressed the desire for solutions due to an increase in crime in the area and the desire for CCTV was expressed in recent community engagement surveys and discussions. This document forms the basis of works undertaken, considerations and the presentation of options and ideas for further discussion.

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Conflict of Interest statement

The key Zenien staff member providing services under this contract is a local City of Kalamunda resident and an active Community member. Cameron has been on the City of Kalamunda Community Safety and Crime Prevention Committee for a number of years. There is/was no realised or perceived conflict of interest from this membership in the preparation of this report.

There were gains from familiarity and demonstrated local knowledge, engagement and understand for the City and Community. Zenien were awarded this contract as part of a fair market test open to the WALGA Preferred Supplier contractors. At no point has preferential treatment been received, expected or implied.

Consultant's Credentials

Cameron Watts (Primary consultant on this project) is an experienced and qualified ICT engineer with 27 years' experience in the technology field. Since 2009, Cameron has led the team at Zenien and has specialised in Network/IP CCTV Surveillance systems and technology, mainly focused on City Surveillance solutions. With a significant market share in the WA Local Government CCTV and Security Market, Zenien had seen the dramatic evolution of the IP CCTV market and technology and (given our existing ICT skills and experience) has been ideally placed to become experts in this field. The Team at Zenien have deployed hundreds of CCTV solutions in similar areas utilising a variety of technologies including 4G, Solar power, wireless and various infrastructure solutions.

Skills and Qualifications held that are relevant to this project:

- Avigilon Technical Certification (same VMS as most City of Kalamunda systems)
- Axis Communications Certified
- Registered Open Cabler (ACMA)
- Genetec/Milestone and Geutebruck VMS system certifications
- Local City of Kalamunda Resident and City of Kalamunda, Community Safety & Crime Prevention Committee member for several years.
- Highly skilled in Solar powered, remotely connected CCTV solutions
- Expert in Design, deployment and support of remote/isolated surveillance deployments

Area summary

The Wattle Grove Cell 9 area is a mostly residential area with a small selection of commercial and retail businesses (refer map below).

Map 1

From a City Surveillance perspective, the three main vehicle entrance points (the focus of this feasibility study) to the area offer attractive benefits as they form limited pinch-points where all vehicular traffic must enter or leave. The approach of focusing on these areas is sound and has been used effectively at other City's (eg: City of Belmont Kewdale Industrial area around Noble st). Such a benefit reduces the requirement of significantly more infrastructure throughout the wider area, especially if visitors/residents can be uniquely identified at these pinch-points.

This approach increases the value for money to stakeholders and increases the deterrent factor for the area (people are much less likely to commit a crime if they have a perception of being watched or having been identified entering or leaving an area).

Actions and Observations

Traffic flow and Pedestrian movements

We attended each site at various times of the day and week (weekends, evenings etc) and observed the level of vehicular and pedestrian/cycling activity in each area. These actions were an attempt to understand the amount and method of public movements in the area. Each area was also assessed for signs of graffiti, dumping of rubbish and similar criminal or anti-social behaviour.

It was deemed that the vast majority of public movements at all three areas where vehicular. The observations were so significant that specific CCTV monitoring of pedestrian movement (as opposed to vehicles) was considered potentially infeasible in a cost vs benefit comparison.

It was noted that at certain times of the day (especially weekdays), there was a significant increase in pedestrian movements using public transport (bus stops), especially south of the Hale/Welshpool Rd E intersection on Welshpool Road East. Consideration of covering or providing shelters for these waiting and approach areas may be a factor in the future. The City may deem this a responsibility of the Public Transport Authority responsibility, and we would recommend further community consultation to ascertain the risk or security perception of users. This is out of scope of this feasibility report but may be considered for further discussion at the Community Safety and Crime Prevention committee.

In many industrial areas where crime is often the theft of large equipment/vehicles, traditional cameras can be useful (especially when used with vehicle license plate capture cameras) to identify someone leaving the area with a trailer or certain equipment on the back of a truck leaving. As the Wattle Grove area is mostly residential, the chances of knowing which vehicle leaving the area has just committed a domestic theft crime when compared to the hundreds of other cars moving through the area is limited. Should a vehicle be stolen, the chance of establishing images that show uniquely identifying features of a driver/passengers is also very limited.

Off-road access

We did note that off-road access to the area was relatively straightforward off Tonkin hwy and off the railway bushland area to the North, both of which reduce the impact of any surveillance at these three pinch points. During our assessment, off-road motorcycles using the northern area were observed, while those observed were not considered a direct threat of crime, anecdotally this may not always be the case. The railway area presents direct, largely undetected access to move between suburbs. The risk of this has been significantly reduced by the recent development of the Kenwick Rail Freight Facility, however access to the North is still largely uncontrolled.

These alternative access routes to the area reduce the perceived difficulty of planning and undertaken criminal acts, especially ones where offenders may be discovered or disturbed during such acts. Off-road access where is it difficult for Police and others to follow while offenders would be using vehicles with non-identifying features (e.g.: license plates) and most likely having their facial features obscured by Helmets etc was considered a minor concern for the community.

We would encourage the City to conduct further community engagement to understand if this perceived risk has historically proved to be an issue. In discussions with City staff, it was highlighted that access from Tonkin Highway may be increasing crime in the area. Investing in further physical security measures (fencing etc) may be a suitable solution to these concerns however we understand that emergency services and City staff access also needs to be carefully considered.

Most crime prevention initiatives are about turning a perceived easy target/area into a more difficult one. Areas that may benefit from additional physical security measures include:

Sheffield Rd – Wattle Grove, North Cul-de-sac
Puddy Lane – Wattle Grove, North
Maamba Rd/Benedict Corner (Access to Yule Brook)
Maamba Rd – Access off Tonkin across bushland area

Physical security/access limiting measures may reduce the security risk of the area, however they may come at the compromise of ease of access and aesthetics for local residents usage of these areas.

Many of these sites may benefit from the public facing residential camera subsidisation program mentioned elsewhere in this document. In our assessment, we did notice a significant presence of existing residential cameras (approximately one in every two houses in some areas) which could be enhanced by encouraging/subsidising more cameras to be focused on public areas rather than direct property coverage.

The deployment of temporary cameras (possibly with analytics) to these areas to assess the types and frequency of people moving in these areas may provide a clearer understanding of the risks associated with ingress from these bush/parkland areas.

In a recent walk-through of the areas, we noticed that the Maamba Rd area parkland access was very overgrown and we saw little (if any) evidence of people moving through this area. In one way, this could mean that disuse of these areas by residents may mean that a fence (or similar) may be accepted more widely. In another way, it may also be evidence that investment in solutions for the area may not be required. We recommend further consultation with residents, Police and possible further clarification of location and type of crime data.

City's Available Assets in the area

An investigation into City-owned assets in terms of City buildings with electricity and communication assets found nothing of consequence. The exception to this is the south-east corner of the Hale/Welshpool Rd east parkland area that may have City electricity assets. No City-owned buildings were found in our assessment that may be suitable for housing CCTV recording equipment

Existing Critical Infrastructure

We completed physical checks as well as a dial before you dig request to establish potentially usable communications infrastructure in each area. This information is also useful to make decisions on the location of any recommended CCTV pole location as the presence of underground or overhead critical infrastructure can significantly increase the cost of any installation.

We found somewhat concerning critical infrastructure in terms of high-pressure gas pipelines, communications links and water pipes in all three areas with a particular note of the Dampier to Bunbury Natural Gas Pipeline on the North side of Tonkin/Hale which should be avoided.

Underground major gas, electrical and communications supply infrastructure should be avoided to reduce risk and the cost (excavation in the area often requires permission and costly supervision). The southern sides of all three Intersections analysed are the lowest risk CCTV infrastructure deployment locations. With the exception of Tonkin/Hale, moving CCTV infrastructure to the Western Side of each intersection may reduce the usefulness of any CCTV deployment. The reduction (in usefulness) is due to distances involved in moving away from the target area. These issues can be largely overcome with technological solutions (increased/customised illumination and optical zoom) however this increases the cost and complexity of any deployment (also increasing maintenance costs).

Communications Assets

Below is a summary of potentially usable communications assets found in the area.

- NBN Assets on the Northern sides of each intersection– NBN interconnect opportunities at each intersection. [see note below]
- Optus fibre (backhaul) on East side of Hale (on Tonkin/Hale Intersection) progressing into Wattle Grove (from Forrestfield)
- Telstra Fibre optic infrastructure moving down Welshpool Rd East, up Bruce Rd (NBN Replicated/shared)
- NBN Backhaul link moving across Tonkin into Wattle Grove alone Hale (most likely on south east side) with breakout points on North-East side of Tonkin at Hardey East Rd (both sides of Hale)

It was noted that communications interconnect opportunities existed at all three intersections but not always at locations that are recommended for City CCTV infrastructure installation (e.g.: South-West side of Hale/Tonkin)

Detailed technical testing of 4G and 5G signal strength was not undertaken. Telstra 4G (with some 5G) was observed. Carrier coverage maps show adequate coverage in all areas, and we see no reason why LTE/5G would not be a practical option for remote communications if required. We see this option as the most likely or logical solution; however, bandwidth caps and ongoing cost will need to be carefully managed and budgeted for.

Direct Line-of-Sight to Lesmurdie/Kalamunda scarp was achievable in most locations (backhaul point-to-point wireless options) however, a lack of City-owned height and communications assets on the scarp removed this from further consideration. Wireless links North to City building assets (e.g. Woodlupine Community Centre) or Forrestfield Police Station were not feasible and not considered further.

NBN Interconnect was considered a suitable option assuming NBN permit non-building-based connections and build costs are low. Fibre to the pole is suggested as best technology to deploy however further discussions would need to be had around ongoing cost, bandwidth plans/limits and if NBN permit such connection options. We believe that NBN are relaxing their strict street address/property connectivity guidelines shortly. This option may increase the upfront and ongoing costs unless sufficient low-latency bandwidth could be gained to use a cloud-based CCTV storage/access service.

Three Vehicle Entry Pinch points – include all

Should a CCTV system be deployed, we recommend that any deployment include all three-vehicle entry pinch-point locations. Any deployment that permits a vehicle to enter or leave the area without being identified or at least captured would significantly reduce the usefulness and community benefit. Further vehicle access physical security measures may be required in some areas to assist with this (see section above, Off-road Access).

Crime Statistics – Comparison and Summary

It is common that a few scenarios or instances of crime can often present impassioned calls for action from a community. While this is completely understandable and we encourage consultation on these matters, it is also important that any resultant actions or decisions are considered on sound and impartial data. To this end, we analysed crime statistics in the Wattle Grove and surrounding areas using publicly available data on the WA Police website. We also obtained crime heatmap and related information from Forrestfield Police who were very helpful.

When comparing these statistics, we focused on crimes that could have been prevented or assisted in successful prosecution if CCTV was installed at the areas highlighted.

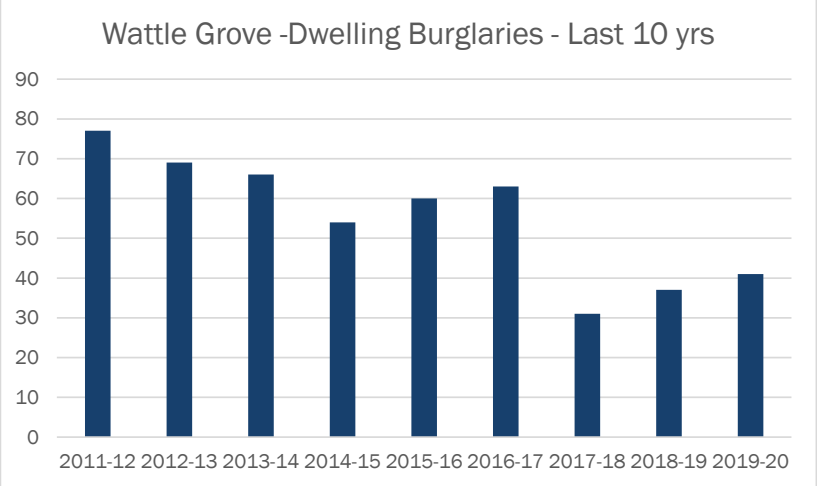
Crime statistics are not unique to the Cell 9 area only and include areas opposite Tonkin Hwy and south of Welshpool Rd East, e.g.: The Wattle Grove suburb.

According to the most recent census, Wattle Grove has approximately 6000 residents consisting of 1610 families in 1962 private dwellings. The median age of residents is relatively low at 32 yrs.

One of the main concerns of residents (according to discussions we had) seems to be that of home burglary.

Statistically, the trend in home Burglaries in Wattle Grove shows a downward trend.

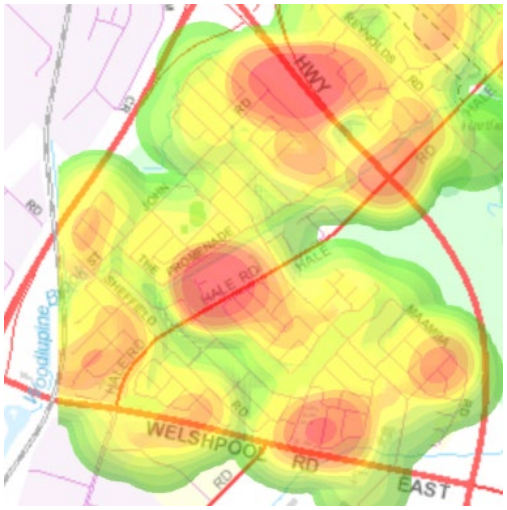
When this is compared with population taken into account the rate of 0.018 burglaries per person in the past three years is shown.



If compared to neighbouring Forrestfield (with a population of 12690) the rate per capita is higher at 0.0238 burglaries per person in the past 3 years, an increase of 31% when compared to Wattle Grove.

If the City was requesting grant funding for this project and it raised the primary concerns of the community being dwelling burglaries, it would not fare well against other areas of Perth or even in the district area. For instance, if the City of Gosnells attempted to seek the same grant funding for Kenwick, (a rate of 0.034 and 86% higher than Wattle Grove) the funding would likely be allocated to the City of Gosnells.

Looking at total crimes (Minus fraud and related offences), the per/capital crime rate is 70% higher in neighbouring Forrestfield. The general trend (while slightly higher last year) is downward for total crimes. Should the trend increase significantly in the next reporting period, this may require further analysis, discussion and actions.



The Crime heatmaps (showing all non-traffic violation crime) in the area show the core areas of crime in the Wattle Grove Cell 9 area.

A few assumptions that can be gleaned by this information:

- It could be assumed that the higher crime areas are not residential but commercial or retail areas.
- The Crime at the North-East side of Bruce Rd. may be a result of the unfenced proximity to Tonkin Hwy (this was also highlighted in our discussions with stakeholders) or potentially centred around Grass Tree Theft from Grass Trees Australia.
- Retail areas may be increasing crime statistics by way of shoplifting and vehicle break-in's (also supported by discussions with Forrestfield Police)
- Commercial Areas on Hardey East Rd may be either increasing the crime rate or (like that of Bruce Rd) the proximity and open access from bushland areas may be playing a part. Proximity to the demonstrated higher crime rate area of Forrestfield may also be playing a minor part.

Unfortunately, these assumptions are merely speculation as the information on-hand does not allow for anything more detailed. If this is useful, the City may wish to work with WA Police to filter out types or crime and more specific locations to make more precise conclusions. Zenien are happy to assist with this process at no charge if desired.

Note: Complete Crime Hotspot profile has been included in this document as Attachment 1

We believe that CCTV coverage the three mentioned locations may do little to prevent crimes resulting in proximity to parkland, Tonkin Hwy or commercial/retail areas.

While we understand that statistics have little bearing on a community that feels that more needs to be done in their suburb, an impartial analysis of supporting evidence or crime statistics would indicate that public or ratepayer's money may be better invested elsewhere.

Relevant CCTV Technology

Various other LGA's and State Government entities are trying a variety of unique and modern technology to aid in their crime prevention and community safety strategies. Some of the more innovative solutions and technologies are listed below as they are also referenced elsewhere in this document.

Analytics

Analytics take standard CCTV cameras and uses a processor (generally a Graphics Processing Unit) to look at the digital footage, frame by frame to ascertain what is happening in the image. The computers are always attentive, do not get tired, need breaks or require holidays and are getting extremely reliable and accurate with their abilities.

Some analytics will look for motion patterns in a scene, the system analyses what it believes is normal behaviour in the scene (e.g.: cars drive down the road, people walk on the footpath etc) and will alert or flag incidents where something different/odd happens. This is most useful in a controlled environment such as a shopping centre or airport.

The Briefcam analytics being rolled out at City of Belmont currently (demonstration available on request) does post processing or live analytics on a host of configurable options. For instance if Forrestfield police needed to identify where a female wearing a white top, blue jeans and wearing a red hat went and what she did, the system can analyse the data on all the relevant cameras and pinpoint incidents of those features. It has license plate recognition and facial recognition abilities also plus it can alert on person/vehicle/object features, speed, direction of travel, dwell time and a host of other similar rules.

The Briefcam system can be used for more than just crime detection or prevention. Information that can be gleaned from this system can assist in town planning, traffic management, staffing rosters, statistics of usage/visitors, pedestrian movement or dwell time heatmaps and unique visitors to a playground or park. This highlights only a few of the potential non-security related outputs of a CCTV solution with advanced analytics supporting it.

Similarly, the system can be used for Occupational Health and Safety, for instance the system could detect that a person entering a construction area was not wearing a hard-hat or high-viz PPE and automatically locked the entrance gate or alerted the safety officer.

The potential benefit of the technology (assuming camera infrastructure also exists) is extremely flexible and scalable however for the purpose of the Wattle Grove Cell 9 area, the lack of a suitable network infrastructure (an possibly budget) such a deployment unlikely be cost effective.

ANPR (Automatic License Plate Recognition)

ANPR is now a mature technology that can uniquely identify vehicles moving in key areas. The Western Australia Police LPR Mesh project has seen this technology being rolled out to highways, country core roads and points of interest across the state. The cameras perform the processing within the camera itself and then send a small image of each vehicle as well as metadata such as time, date, approximate speed, direction of travel and of course vehicle license plate data to a WA Police Server. The license plate data is compared to known blacklists that may have stolen vehicles, vehicles owned by persons of interest, unregistered vehicles or similar and on a successful detection an automatic process alerts the relevant investigating officers. It is also searchable to show historic data should this be required to verify a claim that a suspect was or was not in the area at a set time or to show a pattern of movement through the area.

Similar to other analytics, the ANPR data can be used for more than just law enforcement, it can provide statistics of road use, time of day congestion and traffic flow/speed, the number of unique visitors or repeat visitors to an area and a variety of other statistical information that can be used to plan or respond better to the community.

ANPR is available in many cameras or via software and remote processing on computer hardware. Pricing starts at approximately $1000 per device/image processed however the WA Police ANPR Mesh system uses cameras which are significantly more expensive (Approx. $20,000 each). We understand the more cost-effective option is being trialled by WAPOL however we are not aware of the results of these tests. The core advantages of the Jenoptik based ANPR solution are ease of installation, low ongoing cost and reduced installation cost. The Jenoptik units (pictured) only require a 24VDC power input (can be provided by solar) and a 4G sim card/plan and hence are extremely flexible for a variety of deployments.

1 Jenoptik Vector 2 ANPR Camera

Zenien recently deployed five of these units at key vehicle entrance/exit points to the City of Fremantle. The intent is to eventually have a record of every vehicle that entered or left the City area as well as alert local Police if a vehicle of interest enters or leaves the area. The City of Fremantle have limited access to data from these cameras also which allows them to gain traffic flow information to assist in planning and strategy.

ANPR systems can be used for automation also, for instance is the Zig zag road had gate at the top entrance, an ANPR camera could be used to open said gate if a resident approached the gate after hours. The same camera could provide a list of license plates entering and leaving the Zig zag area and provide Police information on who used the area and how long they stayed. The deterrent factor where visitors know they have been detected and identified provides the greatest benefit as people are much less likely to commit crime or anti-social behaviour knowing they have been identified.

Relevant CCTV Technology Summary

Due to bandwidth constraints and lack of accessible communications infrastructure, it is recommended that processor intensive CCTV analytics not be adopted. Camera-based Analytics may be suitable however, there are no current in-camera analytics that we believe provided sufficient value to the City, Police or the Community (with the exception of ANPR).

Given the significant majority of movements in the area were observed to be vehicular, any CCTV solution deployed should have a focus on vehicle monitoring. In discussions with Forrestfield Police, the significant further advantage of being able to uniquely identify vehicles (especially in a searchable manner or with auto-response to blacklisted vehicles) was considered highly desirable.

Traditional CCTV Cost estimates

Due to lack of power and related infrastructure, the costs of deployment of a traditional CCTV system increase. The proximity to major roadways and critical underground and overhead infrastructure also directly affects the costs of deploying CCTV in these areas.

Assuming that the City were to deploy a CCTV solution similar to that installed at Lion's Lookout, Zig-Zag Carpark and Lesmurdie Falls, the three-location cost estimate is below (modified to use newer model of cameras/technology). Figures are Per Site/Location:

Item Description	Estimated price
4 x Axis P1447-LE @ $1100 ex GST Each	$4400
2 x 340W solar panels	$900
30Amp Solar controller (industrial)	$500
2 x 120Ah Lithium Batteries	$1900
Custom Solar Spigot	$800
Engineering Certificates	$800
Industrial PoE Network Switch	$1200
Control box solution (solar battery and communications)	$1800
6m CCTV Rated CCTV Pole	$3500
Avigilon ACC7 Enterprise Camera License $380 each	$1520
Industrial PC for recording etc	$4500
Software maintenance/upgrade costs (12 months)	$1500
Traffic Management	$3500
Infrastructure installation (Drilling, Cable locating, HIAB Hire etc)	$4500
Industrial 4G Modem (remote access)	$850
12 Months of 100Gb 4G Data plan $150 p/m	$1800
Security Technician – System Installation and Commissioning	$4000
Project Management/Drawings/Documentation	$2000
Costs associated with defects liability cover/warranty	$4000
Estimated cost, per site for traditional CCTV deployment (no ANPR or analytics)	$43470 ex GST

Extrapolating this to all 3 sites plus allowing for tendering and City project management costs we would allow a budget of $150,000 for the initial deployment and $20,000 (due to potential complexity/cost of accessing the sites) per year of maintenance budget. We would allow for a technology replacement schedule of 5 years at a cost of approximately $30000 ex GST per site.

The total estimated cost of running the system over a 10-year period is approximately $450,000 ex GST

While we have not completed direct community engagement, nor do we have an understanding of the City's ongoing budget (for CCTV maintenance etc) or potential grant funding sources (which we expect to be reduced in a post-Covid economy), we have concerns about the overall value that such a solution would offer to the Community, Law Enforcement and the City.

ANPR Solution costs (Solar)

By comparison and assuming the other requirements for ANPR mesh membership are met, the ANPR cameras themselves are very expensive compared to a standard camera. That said, the rest of the deployment and total cost of ownership is reduced.

If the City was to deploy ANPR cameras, we would recommend deploying them away from the core intersection to a location just inside each roadway area. This allows for a most cost-effective installation (away from main underground infrastructure) and allows for a more controlled and narrower vehicle movement pattern (required for effective ANPR)

An example of how these cameras would be offset is pictured here showing the Bruce Rd Intersection recommended camera location

The requirements for an ANPR deployment are simply a power source (24/7), a pole/mounting location and a 4G connection. The Cameras themselves have everything else internal to the camera to complete the desired task.

The amount of power required for the solution (compared to traditional CCTV) is reduced as is the ongoing maintenance and support costs. An estimated summary of a sample deployment is below:

Item Description	Estimated price
1 x Jenoptik Vector 2 ANPR Camera [25W Power draw]	$20000
1 x 200W Solar panel	$350
10amp Solar controller	$600
1 x 100Ah Lithium Battery	$800
Custom Solar Spigot	$400
6m CCTV Rated CCTV Pole (with battery box at base)	$3500
Traffic Management (minimal, away from main road)	$1200
Infrastructure installation (Drilling, Cable locating, HIAB Hire etc)	$1800
12 Months of 100Gb 4G Data plan $150 p/m	$1800
Security Technician – System Installation and Commissioning	$2000
Project Management/Drawings/Documentation	$2000
Costs associated with defects liability cover/warranty	$1000
Estimated cost, per site	$35450 ex GST

While still an expensive initial outlay, this solution provides uniquely identifiable information directly to law enforcement agencies and the City (by negotiation) and has existing automation and notification systems already in place. In addition to this, the ongoing cost of keeping these systems running is approximately $3000 per year per site. This brings a total three site deployment to a cost of approximately $200,000 in a 10-year deployment.

Such a solution costs less than half of the Total Cost of Ownership (over 10 years) of a traditional CCTV solution but offers potentially much more value to WA Police and the Community as a whole. Should the City deem that a system is to be deployed, it is our opinion that an ANPR based system would be more feasible and provide better value than a traditional CCTV deployment.

Even with ANPR cameras in these areas, law enforcement agencies would need to establish patterns of ingress/egress that support pre-defined conclusions. A vehicle moving in/out of the area owned by a person previously associated with home burglary at a time/date aligning with one more burglaries may not provide sufficient evidence to gain a search warrant or conduct further investigation.

When combining evidence from witnesses or residential/commercial public facing CCTV cameras in the area with the uniquely identifying ANPR data at entry points, chains of evidence supporting further investigation become dramatically easier and more focused.

Consider an example where a red Toyota Hiace van was captured or witnessed outside a property on Tuesday afternoon that later received a report of a burglary. If ANPR data revealed the identity of that vehicle, then the association of this data would warrant further investigation and possibly a search warrant of the owner's property where stolen goods may be discovered and recovered.

ANPR cameras on their own are not a silver bullet solution, a combination of approaches including community engagement, 3rd party CCTV coverage, ANPR cameras, community education/vigilance, deterrent factors, physical security, lighting and effective policing all contribute.

A note on future plans of separated interchange upgrades at Hale/Tonkin and Welshpool Rd East/Tonkin

At the time that this report was prepared, Main Roads and relevant authorities were still in a Community Consultation phase of the project. The City did not have further information to that which was publicly available and confirmed design details were not available. As a result of these factors, we have omitted this potential influence from our consideration. We will provide feedback on any direct implications of any CCTV rollout plans as required in future at no cost to the City.

Due to our recommendation to avoid the Tonkin/Hale Rd intersection as much as possible due to significant infrastructure and complexity of any installations in the area, we would assume that any changes would have minimal impact on recommendations made in this document.

Similarly, any changes to the Welshpool Rd East/Tonkin Hwy intersection would have minimal effect on our assessment. That said, if the changes created:

a) New roadways, pedestrian pathways or related layout changes to the Wattle Grove Cell 9 area
b) A change in the ability to move through the areas (e.g.: Tonkin Hwy traffic noise limiting fencing)
c) A direct change in the type, manner or amount of vehicle or pedestrian traffic in the area

Then we would welcome the opportunity to explore these effects further and provide additional feedback as required.

Security patrol service

We understand that this community (as well as many others) may have been looking at the options of a community security patrol service of their area. Such an initiative may be a solution that could be offered by the City or engaged and paid for by local community support groups. Many other LGAs offer these services and they are funded part of a Community Security Levy on rates. We also understand that an action of the City's endorsed Community Safety and Crime Prevention Plan 2020 -2025 is to investigate and report the possibility and financial impact of introducing a security patrol service.

Anecdotal evidence of these programs has seen an increased sense of community security in larger population areas such as City of Belmont and City of Cockburn where council-based patrols are in place. City run security services with CCTV solutions on the security vehicles seem to be the most popular and useful deployment option. City employed staff offers greater results and additional community benefit however most LGA's tend to contract staff from security companies and provide the vehicles/systems for the program.

While it can be an effective deterrent, scheduled patrolling patterns can be easily observed and avoided. Any City run security patrol service should respond to complaints/reports but also intruder alarm activations etc.

These services are considered most effective and provide the best value to the Community when they:

- Are alerted to and respond to intruder alarms (may require a shared or co-ordinated monitoring service or residents/businesses to update their monitoring service to also notify the City Security Patrol on alarm activation)
- Complete regular security checks on residents/businesses premises when they are closed or on vacation holidays etc. The City would need to confidentially receive requests for such on their website.
- Patrol in environmentally friendly vehicles to minimise the impact of the patrols on the environment
- Are staffed by City employees (not contractors)
- Have CCTV on the vehicles to gather evidence and assist in the protection of the Security staff
- Possibly have a combined plan to subsidise (possibly from grant funding) intruder alarm upgrades as required or for monitoring to be a service offered by and co-ordinated by the City.

Other LGA's have seen substantial reductions in statistical crime as well as increases in the Community perception of Safety and Security in their areas with regular and visible Community Security patrol. When this is combined with a quick response to Security events (e.g.: Intruder Alarm, Community reporting of suspicious activity/anti-social behaviour etc) over time criminals will generally move to other areas where they receive more time and less risk of detection. The Patrol service further increases the impression that the Wattle Grove (or City of Kalamunda) area is a more difficult target for crime than other areas.

While we encourage the City of seek further clarification as to the costs of providing this service (from other LGA's actively providing the service), we have experience with figures of approximately $400,000-$450,000 ex GST per vehicle, per year for a 24/7/365 service. This approximate cost includes:

- Purchase price of the vehicle (depreciation between purchase price and resale value)

Vehicle changeover costs (e.g.: vehicle signage, communications systems, and CCTV system changeover etc)

- Fuel, Insurance and Vehicle maintenance/running costs
- Cost of supplying and installing and maintaining a suitable CCTV solution and optional Body worn camera system to the vehicle/patrol officer.
- Labour costs/staff salary (noting that approx. 2.5 - 3 FTE's are required to operate a security vehicle when factors such as annual leave, other leave entitlements, staff hand-over periods and related costs are considered)
- Co-ordination costs – Community Safety staff require to co-ordinate rosters, patrol routes, vacation checks, incident reporting, statistical information gathering, OH&S, vehicle management and community engagement.

The City of Belmont currently spend approximately 5% of rates collected on Security and Emergency Services, the City of Cockburn spend approximately 4%, these amounts are collected from ratepayers as part of their standard rates. The City of Kalamunda does not currently collect a Security Levy or include a security related costs in their rates. We would assume that if the community patrols were provided, a Security Levy would need to be added to ratepayer's annual fees and charges. Economies of scale would indicate that a City of Kalamunda wide Security service where all suburbs share the costs and benefit from the service may be feasible. Having a

Wattle Grove, Cell 9 only Security service would require funding to be raised by that specific local community or paid for by those residents themselves.

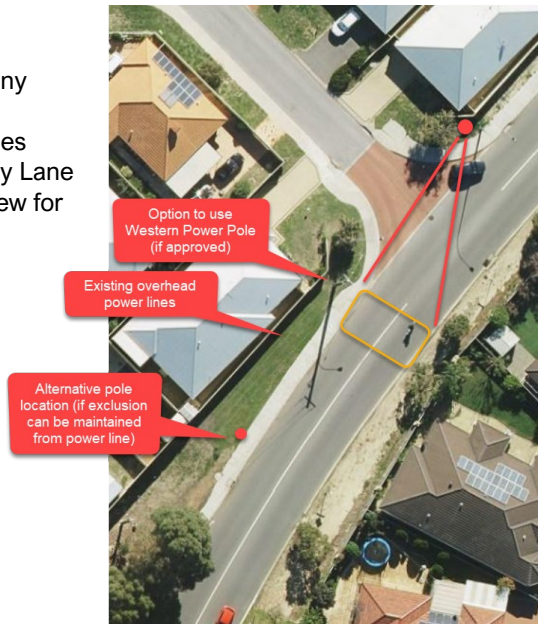
ANPR Camera Suggested locations

Should the City decide to install ANPR cameras and approvals from WAPOL etc are provided, below is our recommended locations and capture areas for each location.

Note: Jenoptik are soon to release the Vector 3 camera which has a detection range of 12m (approx. 3 lanes) at a cost of approx. $4000 more per camera. As this is not currently available, we have designed around the Vector 2 (8m – 2 lanes).

Hale Rd and Welshpool Rd East

- Locations closer to Welshpool Rd E too wide (too many lanes) to be suitable
- Overhead power lines and trees also present obstacles
- Solution will not capture vehicles moving down Puddy Lane
- Location provides clear unobstructed north facing view for optimised solar power
- Provides 2 lane, controlled light environment, may benefit from street light at capture zone



Hale Rd and Tonkin Hwy

- Location closer to Tonkin Highway not suitable (unless using newer 3 lane capable cameras which are more expensive) due to width of road (14m, Vector 2 cameras have 8m capture zone)
- Overhead power lines on South side of Rd may present obstructions
- Location provides clear unobstructed north facing view for optimised solar power

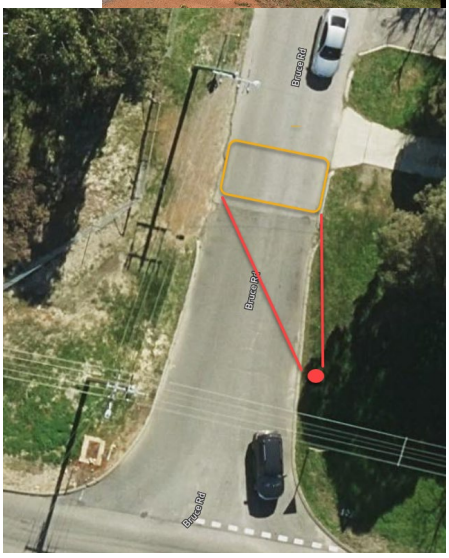
The alternative is to reverse the capture zone and not capture Hardey E Road traffic which would reduce the effectiveness of the solution. (or use the Vector 3 camera – soon to be released)

Bruce Rd and Welshpool Rd East

Bruce road is limited by the fact that the overhead power lines on the North side of Bruce rd. Positioning the camera on the Southern side will work, however it may receive resistance from residents not wanting a pole/camera in their front yard.

Having the pole outside the pole exclusion area may be an option (will require bollards to protect it) and may end up too close to the road to be functional.

The alternative side of the road recommended position would look something as shown. This may receive partial shading on winter mornings (from vegetation) so care will need to be made to ensure adequate solar panel size and batteries.



Conclusion and Summary

Please also see the Executive Summary for a brief overview of findings in this document.

In summary, while we are passionate CCTV and technology advocates, after analysing the sites, statistics, and other data/discussions our recommendation is not to install CCTV solutions similar to that deployed by the City in other areas.

We do encourage further investigations and discussions into the following strategies (in order of preference):

1) The City Community Safety and Crime Prevention Committee to discuss and investigate the proposed idea of a Community Security Patrol service. Discussions to include how such an initiative fits in with the Community & Safety Crime Prevention Plan and estimated City of Kalamunda specific costs to be drafted. Information from other LGA's currently offering this service to be gathered and provided to the Committee for discussion. Findings and recommendations from this process to be presented to Council as appropriate.

2) Discuss the option of a CCTV Subsidy Program (possibly as a trial just for Wattle Grove to avoid a potential flood of residents throughout the City) internally and at the Community Safety and Crime Prevention Committee. Seek feedback from the Town of Victoria Park as to the success and usefulness of their similar project. If the project receives support, seek Council support and move to attempt to secure grant funding for such an initiative. A condition of a resident/business gaining funds would be that their system must be registered on the WA State CCTV Register and they must agree to provide footage to law enforcement agencies on request.

3) Explore the options and funding sources for the proposed ANPR option. Discuss with relevant stakeholders for support/approval. Zenien to provide cost estimates for grant funding if required and/or assist with specification if desirable.

4) Potentially explore option for physical security measures may assist with reductions in crime. Work with Main Roads on plans for Tonkin/Hale intersection to include noise and security barriers as appropriate.

Obviously, we encourage the City to continue the existing good work with Community engagement, working with WA Police, conducting Security forums, neighbourhood watch programs and Community committees.

ATTACHMENT 1 – Area Crime Heatmap **[Not for Public Distribution]**