

# Smart Curb Management

June 2021  
ASX: SNS  
OTCQB: SNN SF

---





# Curb side regulations

They are complex and change every few meters on the Curb

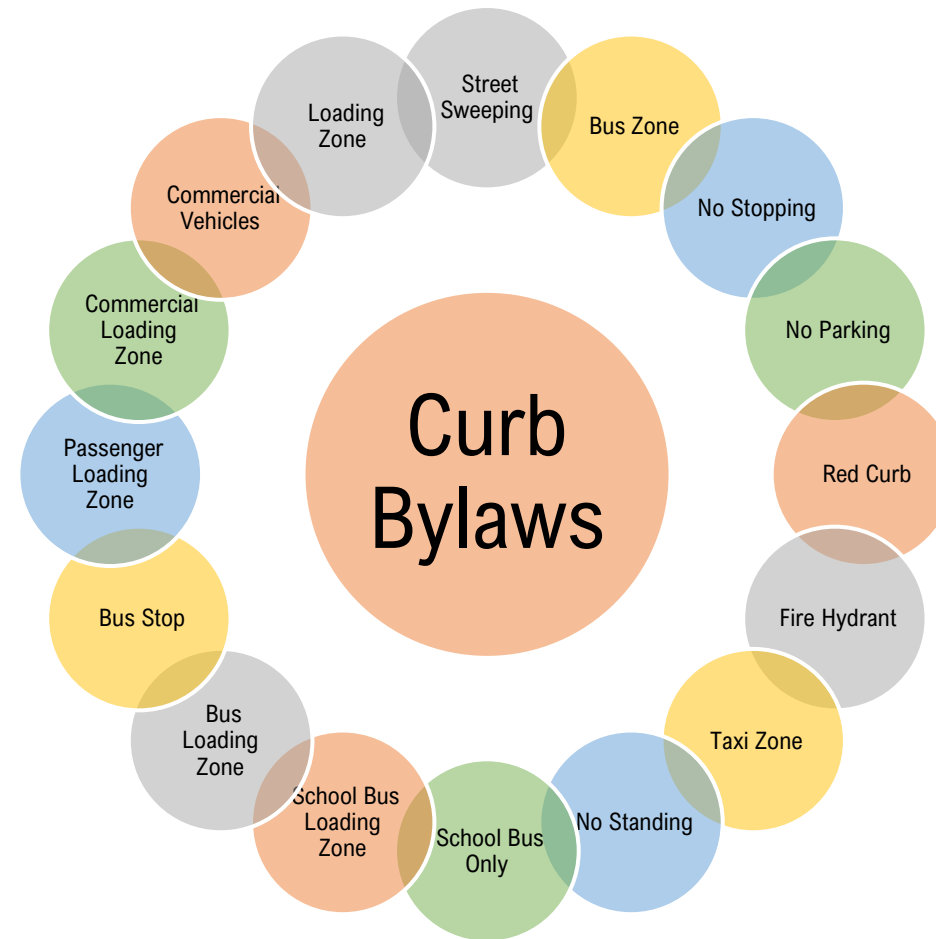
Managing curb space efficiently is the single biggest issue faced by cities globally



# Curb side regulations

They are complex and change every few meters on the curb

Managing curb space efficiently is the single biggest issue faced by cities globally



# Enforcement of curb side regulations

Manual  
and semi-automated  
methods -  
Current state of the art

1. Rangers walk the streets to manually enter license plates to
  - check parking violations and
  - issue printed paper tickets
2. Rangers walk the streets using a handheld with LPR software to automatically scan license plates
  - check for parking violations and
  - issue printed paper tickets
3. Rangers walk the streets waiting for in-ground sensors to send notifications for time limited parking offences and when notified
  - they take a picture of the vehicle and
  - manually enter license plate data to
  - issue printed paper tickets
4. Rangers drive the streets with vehicle mounted LPR cameras to
  - scan number plates and check for paid, permit violation offences and time limited parking offences and
  - when violations are detected, rangers stop the vehicle to get out of the vehicle and issue printed tickets



# Enforcement of curb side regulations

## Automated Solutions using SenFORCE

1. Some rangers drive the vehicles, while other rangers walk the streets and wait for the Mobile LPR vehicles to send notifications for paid, permit or timed parking violations
  - when alerted for a violation, the “walking” rangers are directed to violating vehicles using their smartphone GPS to issue printed tickets
  - The “driving” rangers continue to drive
2. Some rangers drive the vehicles, and **No** rangers walk the streets
  - detects all kinds of parking violations (above and beyond payment and permit related violations) and sent to a cloud hosted centralized back-office system
  - officers' login to the back office to review offence related evidence and accepted violations are then sent out in mail
3. **No** rangers on the roads at all
  - Use fixed cameras to detect all kinds of parking violations (above and beyond payment and permit related violations)
  - Follow steps outlined in item 2 above.



# SenFORCE

For automated monitoring and enforcement of curb side regulations

- SenFORCE is SenSen's solution for monitoring and enforcement of curb side parking regulations
- In this solution, the sidewalks are filmed using cameras & sensors mounted on
  - city owned vehicles or
  - curb side poles or
  - other city owned infrastructure
- Sensor AI technology is then used to extract relevant and accurate information to support enforcement of curb side regulations and associated analytics applications



# SenFORCE

For automated monitoring and enforcement of curb side regulations

For enforcement, our sensor AI engine detects vehicles and objects of interest in and around the curb and

- Using GPS and EMT, our proprietary localisation technology, the system determines if the detected vehicle/object belongs to a parking restriction zone
- A business rule engine then combines all this data and automatically determines if any of the detected vehicles violate the zone rules
- vehicles that violate the zone rules are ticketed

For monitoring, our sensor AI engine detects vehicles and objects of interest in and around the curb to

- track live parking occupancy on streets
- count Ubers or Lyfts via their stickers and
- send notifications to relevant authorities to act
- and blurs pedestrians for privacy





# SenFORCE

Vehicle Mounted Cameras & Sensors

Brisbane, Singapore, Las Vegas, Chicago, Calgary, Edmonton

Used by 35+ Cities Globally





# SenFORCE – Mobile



## Vehicle Mounted Systems

## Back Office Software

### Hardware (Vehicle mounted POD)

### Software

### Cloud or on-Prem Hosted Back Office

High accuracy GPS with RTK corrections via subscription

High resolution cameras which can operate in day and night

Edge processing unit with internet connectivity

SenSen's inhouse mobile ANPR

Patented state of the art parked vehicle GPS estimation

Automated violation detection of parking bylaws in the geo fences

Central database for evidence management

Business Rules Engine

APIs to export the violation data & edge date

Web application for review and processing of violations

# SenFORCE

Comprehensive Digital Evidence

Date: 30 November 2017 Time: 12:51:35 User ID: CPA10986



Date: 12 January 2020 Time: 09:27:25.549



Date: 30 November 2017 Time: 12:51:37 User ID: CPA10986





# SenFORCE

Pole Mounted Cameras & Sensors

Brisbane, Singapore, Las Vegas, Chicago, Calgary, Edmonton

Used by 35+ Cities Globally



# SenFORCE – Fixed



## Pole Mounted Cameras

## Back Office Software

### CCTV Cameras

### Software

### Cloud or on-Prem Hosted Back Office

Solar powered / direct powered

Internet enabled for data transfer

Edge processing unit with internet connectivity

SenSen's inhouse fixed mode ANPR

Patented vehicle detection & tracking

Automated detection of bylaw violations

Central database for evidence management

Business Rules Engine

APIs to export the violation data & edge system

Web application for review and processing of violations



# Infringement Notice

State Penalties Enforcement Act 1999



DATE OF ISSUE : 13 August 2020

[Redacted]	<b>INFRINGEMENT NUMBER</b>	533972
	<b>PENALTY DUE</b>	\$133.00
	<b>DATE DUE</b>	10 September 2020

This infringement notice has been issued to you as the owner of the vehicle at the relevant time, in accordance with section 14 of the State Penalties Enforcement Act 1999. The vehicle was observed committing the alleged parking offence.

You have only 28 days from the date of issue shown on this notice to choose one of the options overleaf.

Failure to pay the infringement penalty by the due date may result in the matter being referred to the State Penalties Enforcement Registry (SPER) and further enforcement action may be taken. Once passed to SPER, additional costs will be incurred.

Alleged Offence Details		Vehicle Details	
<b>LEGISLATION</b>	Transport Operations (Road Use Management - Road Rules) Regulation 2009	<b>REGISTRATION NUMBER</b>	[Redacted]
<b>OFFENCE</b>	s 205(1) Parking longer than indicated (permissive parking signs)	<b>STATE</b>	QLD
<b>OFFENCE TIME</b>	12:28 PM	<b>MAKE</b>	Jeep Cherokee
<b>OFFENCE DATE</b>	12 August 2020	<b>BODY TYPE</b>	Wagon
<b>LOCATION</b>	Logan Road, Underwood	<b>COLOUR</b>	See Photo
<b>PENALTY</b>	\$133.00	<b>OFFICER</b>	[Redacted]



**LOGAN CITY COUNCIL** How to Pay

<b>By Phone:</b> Customer Service on (07) 3412 3412.	<b>INFRINGEMENT NUMBER</b>	533972
<b>By Internet:</b> <a href="http://logan.qld.gov.au">logan.qld.gov.au</a> - Go to Online Services & Payments.	<b>PENALTY DUE</b>	\$133.00
<b>By Mail:</b> Send cheque or money order payable to Logan City Council, P.O. Box 3228, Logan City DC, Qld, 4114.	<b>DATE DUE</b>	10 September 2020
<b>In Person:</b> Visit a Logan City Council Customer Service Centre at: Logan Central, Beenleigh or Jimboomba.		

SAFEROADS4LOGAN

## Sample Infringement Notice

Vehicle Owner Postal Address, Infringement PIN, Issue date

Violation enforcement legislation, regulatory act etc)

Violation committed and penalty details

Violation location and captured timestamp

Vehicle LPN

Vehicle make, model, body type, registered state

Onfield parking ranger badge code who was driving

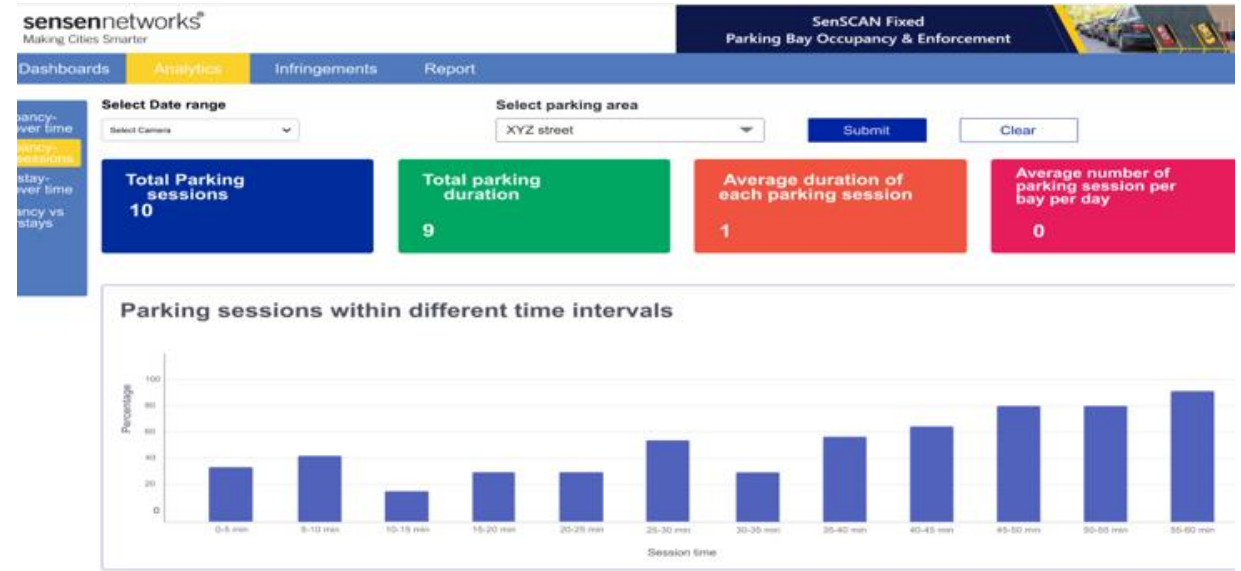
Violation evidence images

Watermarked with timestamp and location

Payment options and payment confirmation slip

Click on the image to open the PDF file

# Dashboards & Data Analytics



# Representative Customers







Contact Us for More Information

[www.sensennetworks.com](http://www.sensennetworks.com) | [sales@sensennetworks.com](mailto:sales@sensennetworks.com)