

# Bradford west Gwillimbury



## **Traffic Mitigation Strategy**

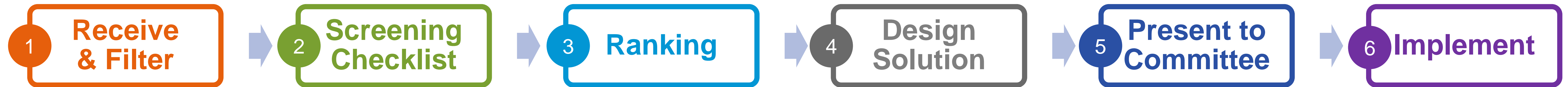
Public Information Centre #3

Traffic Calming Process: Example Demonstration



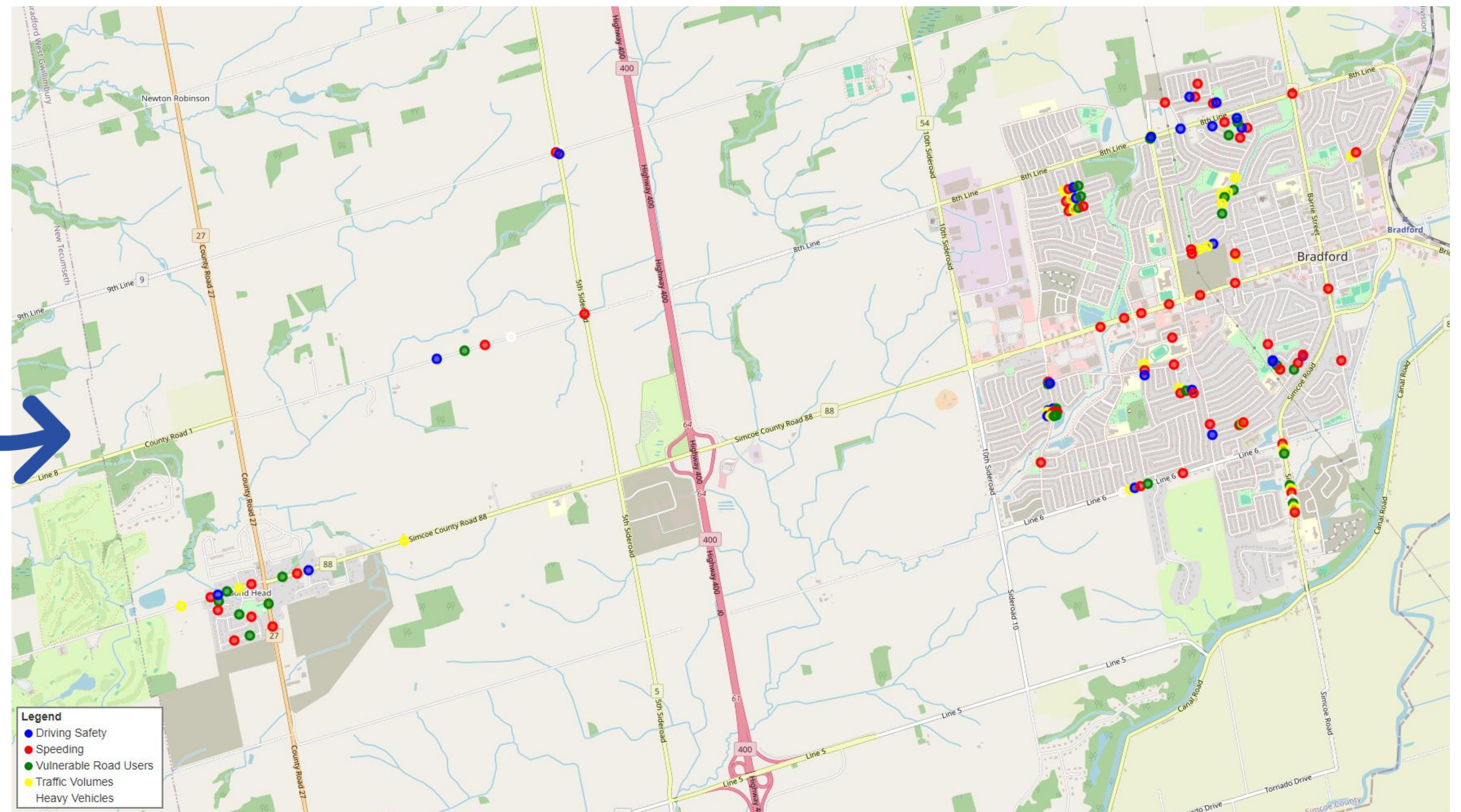
# Traffic Calming Process – Walk-Through

The **Traffic Calming Process** includes the following key steps:



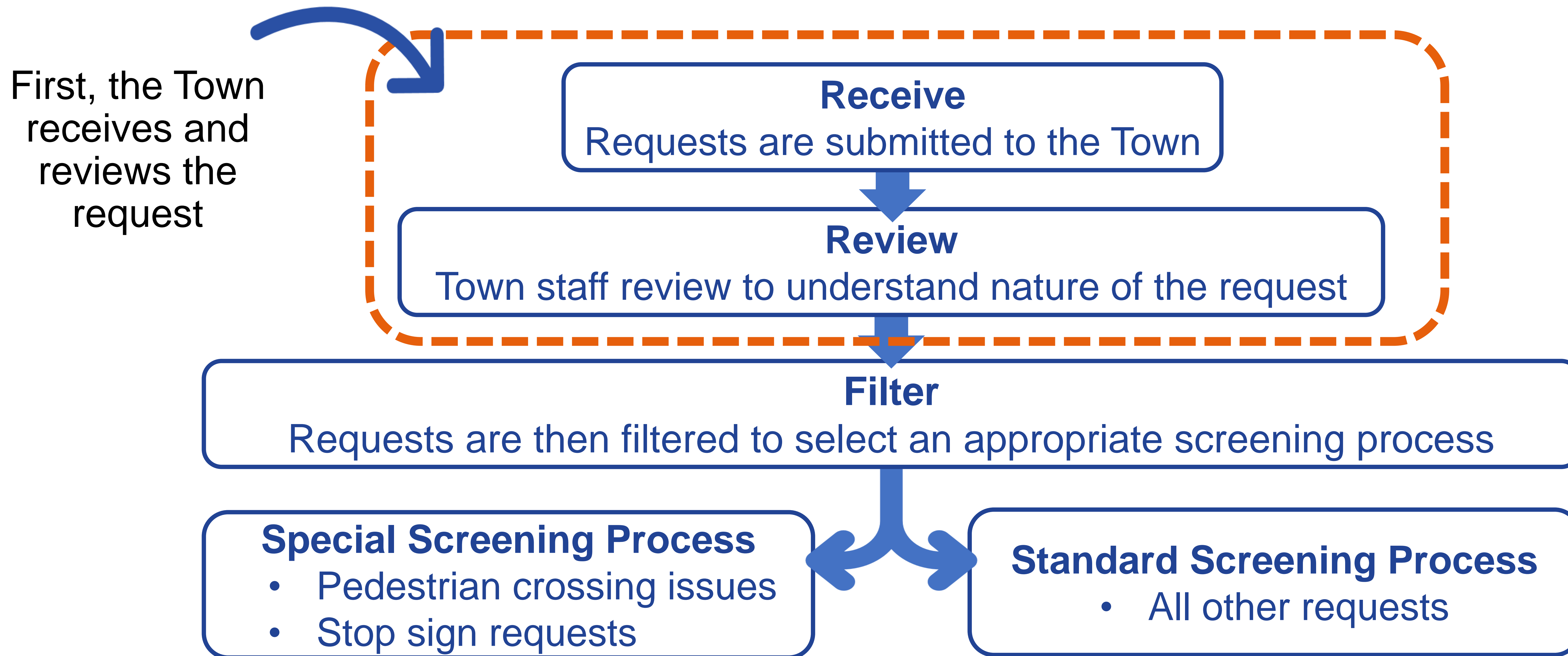
The following slides will walk through each step of the process using real-world examples from BWG.

The examples were selected based on traffic data, focusing on existing traffic concerns in BWG.

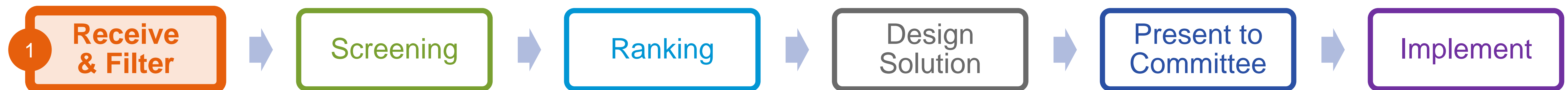


# Example #1

# Receiving Traffic Calming Requests

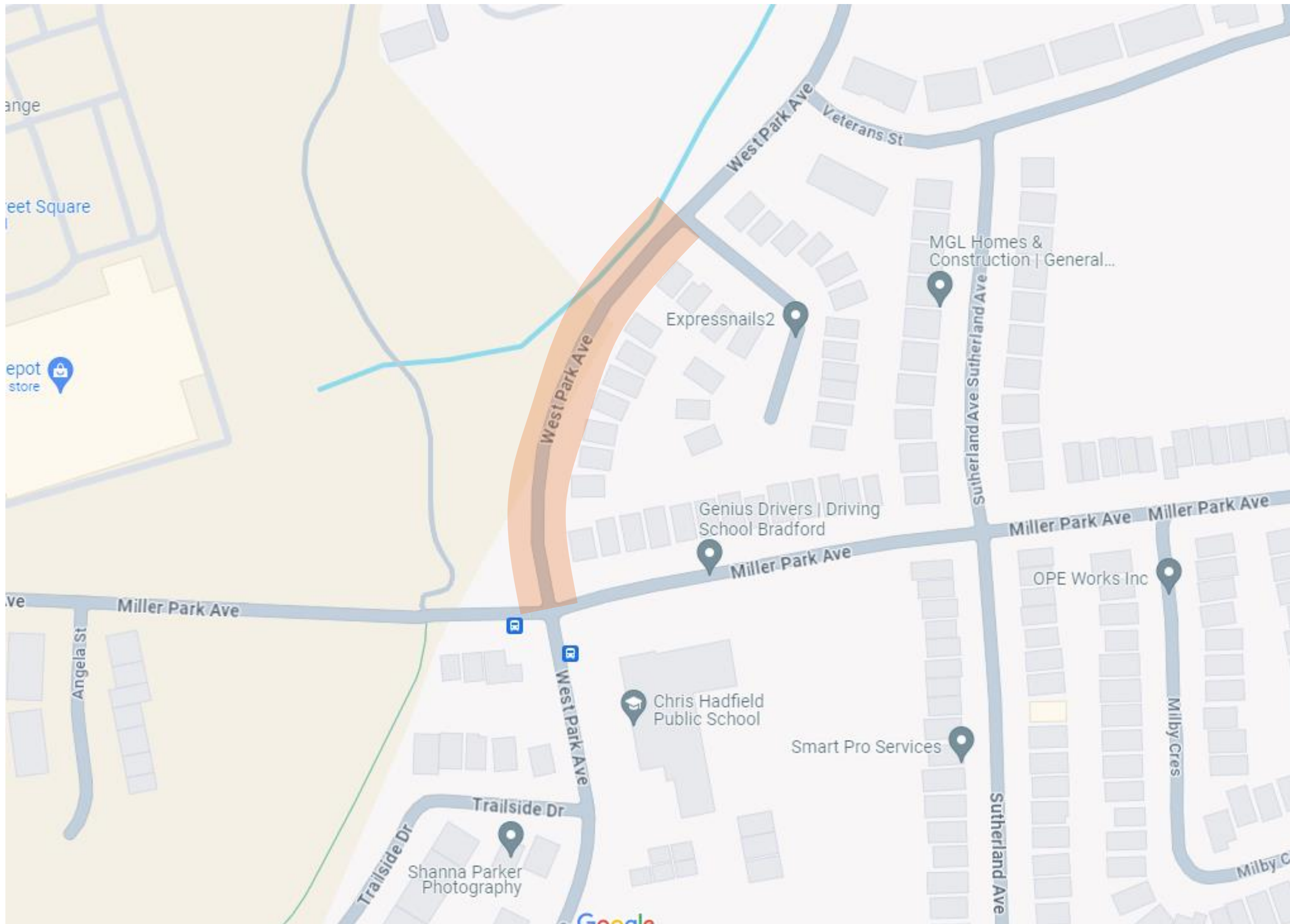


Step 1: **receive and filter traffic calming requests** submitted by the community



# Receiving Traffic Calming Requests

## West Park Avenue between Miller Park Avenue & Memorial Court



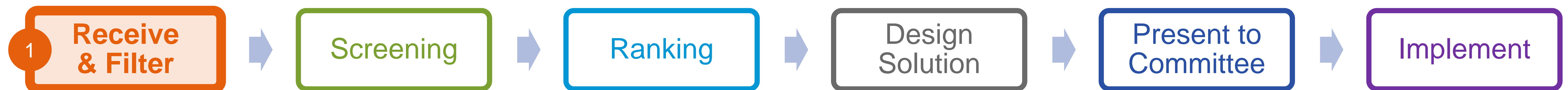
For this example, there is a **concern about speeding** and community members would like to see traffic calming measures implemented.

Here are some key details about the location:

- **Road type:** urban collector, within BWG
- **Posted speed limit:** 40 km/hr
- **Operating speed:** 51 km/hr
- **Traffic volumes:** 4416 vehicles per day
- **Road segment:** 210 m
- **Collision history:** 8 collisions
- **Truck percentage:** 4%

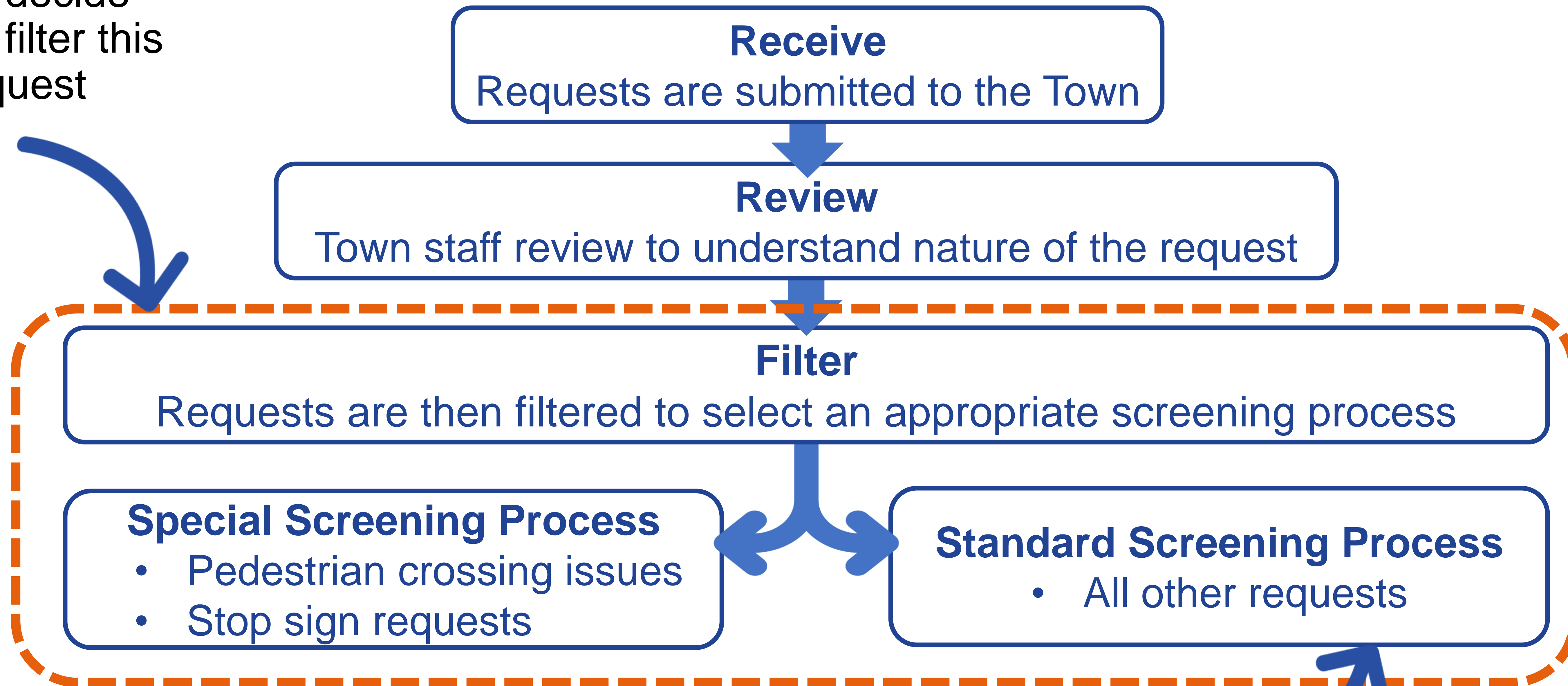
\*This example is based on 2022 data

Step 1: **receive and filter traffic calming requests** submitted by the community



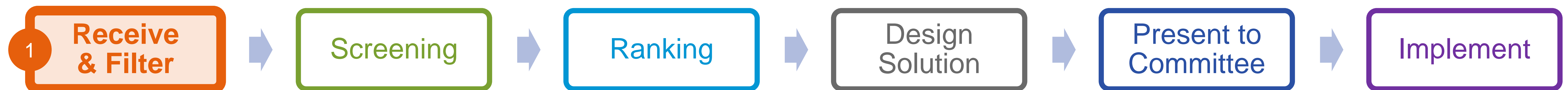
# Receiving Traffic Calming Requests

Now, the Town must decide how to filter this request



Since this request is not regarding a pedestrian crossing issue or a stop sign request, it will proceed to the **standard screening process**

Step 1: **receive and filter traffic calming requests** submitted by the community

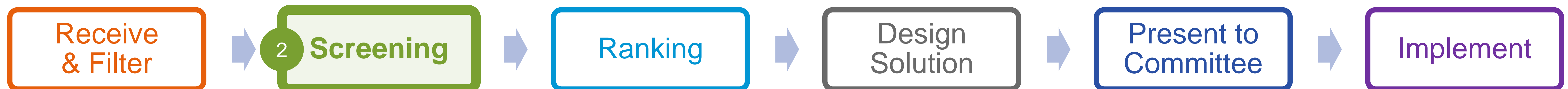


# Standard Screening Process

Initial Screening Checklist				
CRITERIA #	SCREENING CRITERIA	MINIMUM REQUIREMENT	YES/NO	
1	Road Jurisdiction	The road of concern is under the jurisdiction of BWG.	✓	
2	Road Length	The area of concern is an uninterrupted road segment, with at least 100 m long, between two traffic control devices (e.g., stop sign to stop sign).	✓	
3	History	There have been no assessments within the past 36 months, unless significant road or land use changes have occurred nearby, likely affecting traffic patterns.	✓	
4	Nature of concern	The request can be addressed through the use of traffic calming measures (i.e., issues are related to speeding, traffic infiltration, cut-through traffic, etc.)	✓	
5	Speeding	<b>Posted speed of:</b>	✓	
		50 km/hr or below: 85th% > 10 km/hr?		
		60 km/hr: 85th% > 10 km/hr?		
		70 and 80 km/hr: 85th% > 10 km/hr?		
6	Volume Thresholds: Average Daily Traffic (ADT)	Does the road studied meet or exceed the minimum average daily traffic volume threshold below based on collected data?	✓	
		<b>Rural Road: Minimum ADT met?</b>		
		• Local: 500 vehicles / day		
		• Collector: 500 vehicles / day		
		<b>OR</b>		
		<b>Urban Road: Minimum ADT met?</b>		
• Local: 750 vehicles / day				
• Collector: 2000 vehicles / day				
7	Road grade	Maximum threshold of 6%	✓	
<b>CRITERIA #1 TO #7 ALL MET?</b>				
If YES, then the traffic calming request satisfies the screening criteria and should proceed to Step 2 – Ranking Worksheet.				

For this example, each criteria receives a “yes”. Therefore, the request will **proceed to the next step**: ranking and scoring.

Step 2: complete the **screening process**



# Ranking Worksheet

Ranking Worksheet						
CRITERIA		URBAN		RURAL		POINTS
		Local	Collector	Local	Collector	
Speeding	Speeding Threshold	0	10	0	10	0-25
	Speeding	Local: 1 point per km/hr over posted speed limit Collector: 1 point per km/hr over 10 km/hr over posted speed limit				
ADT	Y (veh/day ADT overage amount)	100	200	50	75	0-20
	Z (veh/day ADT threshold)	750	2000	500	500	
	ADT / AADT minimum threshold	1 point for every Y vehicles/day over Z vehicles/day				
Collision Rate		1 point for each 2 collisions within a 50 m radius + 2 points for each pedestrian collision				0-10
Truck Volume		1 point for each % that truck traffic volumes represent greater than 2% of the 24 hr traffic volumes				0-5
Vulnerable Road Users		5 points if there are no protected walking or cycling facilities		n/a		0-5
		5 points for each nearby pedestrian generator fronting the road		5 points for each nearby pedestrian generator fronting the road		0-10
Driveway Density ( $\rho$ ) $\rho$ = number of driveways per 1 km		n/a		<ul style="list-style-type: none"> <li>• 0 points if <math>\rho &lt; 0.5</math></li> <li>• 1 points if <math>0.5 \leq \rho &lt; 5.5</math></li> <li>• 2 points if <math>5.5 \leq \rho &lt; 10.5</math></li> <li>• 3 points if <math>10.5 \leq \rho &lt; 15.5</math></li> <li>• 4 points if <math>15.5 \leq \rho &lt; 20.5</math></li> <li>• 5 points if <math>\rho \geq 20.5</math></li> </ul>		0-5
<b>Total Score</b>						<b>175</b>

This example receives a total score of 24. This score will be compared to other requests to **prioritize projects** going forward.

1

12

4

2

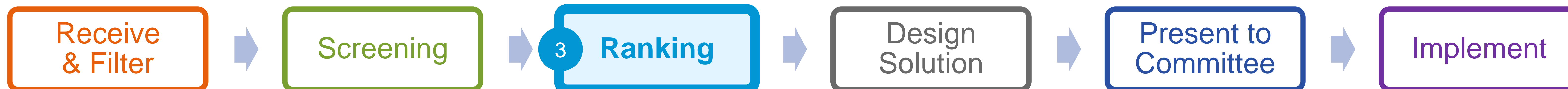
0

5

N/A (only applicable for rural roads)

**24 / 75**

Step 3: complete the **ranking worksheet**





# Selecting a Design Solution

To select an appropriate design solution, the Town will utilize the “3 Es” approach.

The Town will investigate **Education** measures first as they are lower-cost, quick build options

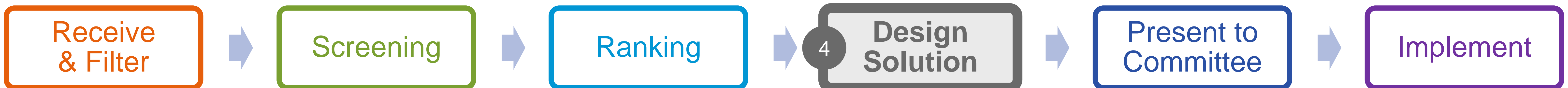
When Education measures alone are not feasible, the Town will consider **Enforcement** & **Engineering** measures

## Traffic Calming Measures

Level of Impact  Low/None  Medium  High

Measures	Potential Advantages			Potential Disadvantages			Road Classification				
	Speed Reduction	Volume Reduction	Conflict Reduction	Emergency Response	Active Transportation	Maintenance	Local	Collector	Rural		
									Hot Mix Asphalt	Surface Treatment	Gravel
Education											
Flexible Bollards	○	○	○	○	○	●	✓	✓	x	x	x
Pavement Markings <sup>2</sup>	●	○	○	○	○	○	✓	✓	✓	✓	x
Radar Message Board	○	○	○	○	○	○	✓	✓	✓	✓	✓
C.S.Z.	●	○	○	○	○	○	✓	✓	x	x	x
40 km/h Speed Limit Area	●	○	○	○	○	○	✓	✓	x	x	x
Enforcement											
Automatic Speed Enforcement (ASE)	●	○	○	○	○	●	✓	✓	✓	✓	✓
Engineering – Vertical Measures											
Raised Intersection	●	○	○	○	○	○	✓	✓	x	x	x
Speed Cushion	●	○	●	○	○	○	✓	✓	x	x	x
Speed Hump	●	○	●	●	○	○	✓	✓	x	x	x
Engineering – Horizontal Measures											
Chicane	●	●	●	○	○	○	✓	✓	x	x	x
Curb Extension	○	○	○	○	○	○	✓	✓	x	x	x
Curb Radius Reduction	○	○	○	○	○	○	✓	✓	x	x	x
On-Street Parking	○	○	○	○	○	○	✓	✓	x	x	x
Raised Median Island	○	○	○	○	○	○	✓	✓	✓	✓	x
Traffic Circle	●	○	●	○	○	○	✓	✓	✓	✓	x
Engineering – Obstruction Measures											
Directional Closure	●	●	○	○	○	○	✓	✓	x	x	x
Diverter	○	●	○	○	○	○	✓	✓	x	x	x
Full Closure	○	●	●	●	○	○	✓	✓	x	x	x

## Step 4: select a design solution



<sup>1</sup> Effectiveness of regulatory measures are dependent on enforcement

<sup>2</sup> Various pavement markings have different levels of impacts for “Speed Reduction”, the upper ranges of speed reduction effectiveness was cited

# Selecting a Design Solution

In this case, a measure like flexible bollards may be selected as a preferred design solution because they:

- Are suitable for an urban collector road
- Have speed reduction impacts
- Support conflict reduction between users



Traffic Calming Measures

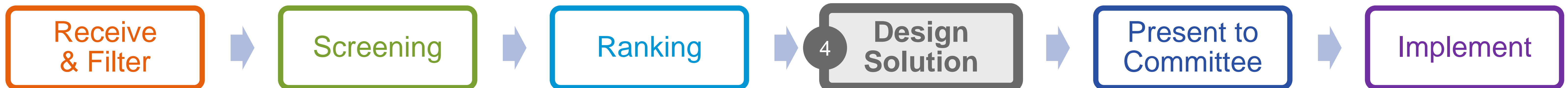
Level of Impact  Low/None  Medium  High

Measures	Potential Advantages			Potential Disadvantages			Road Classification				
	Speed Reduction	Volume Reduction	Conflict Reduction	Emergency Response	Active Transportation	Maintenance	Local	Collector	Rural		
									Hot Mix Asphalt	Surface Treatment	Gravel
Education											
Flexible Bollards	●	○	●	○	●	●	✓	✓	x	x	x
Pavement markings <sup>2</sup>	●	○	○	○	○	●	✓	✓	✓	✓	x
Radar Message Board	●	○	○	○	○	●	✓	✓	✓	✓	✓
C.S.Z.	●	●	●	○	○	○	✓	✓	x	x	x
40 km/h Speed Limit Area	●	○	●	○	○	○	✓	✓	x	x	x
Enforcement											
Automatic Speed Enforcement (ASE)	●	●	○	○	○	●	✓	✓	✓	✓	✓
Engineering – Vertical Measures											
Raised Intersection	●	○	●	●	●	●	✓	✓	x	x	x
Speed Cushion	●	●	●	●	●	●	✓	✓	x	x	x
Speed Hump	●	●	●	●	●	●	✓	✓	x	x	x
Engineering – Horizontal Measures											
Chicane	●	●	●	●	●	●	✓	✓	x	x	x
Curb Extension	●	○	○	○	●	●	✓	✓	x	x	x
Curb Radius Reduction	●	○	○	○	●	●	✓	✓	x	x	x
On-Street Parking	●	○	○	●	●	●	✓	✓	x	x	x
Raised Median Island	●	○	●	○	○	●	✓	✓	✓	✓	x
Traffic Circle	●	●	●	●	●	●	✓	✓	✓	✓	x
Engineering – Obstruction Measures											
Directional Closure	●	●	●	●	●	●	✓	✓	x	x	x
Diverter	○	●	●	●	●	●	✓	✓	x	x	x
Full Closure	○	●	●	●	●	●	✓	✓	x	x	x

## Step 4: select a design solution

<sup>1</sup> Effectiveness of regulatory measures are dependent on enforcement

<sup>2</sup> Various pavement markings have different levels of impacts for "Speed Reduction", the upper ranges of speed reduction effectiveness was cited



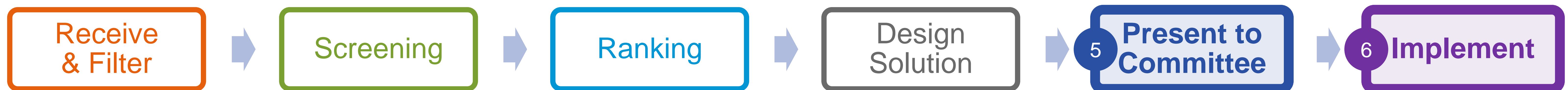
# Approvals & Implementation

The Town would then present the **proposed design solution** to the Community and Traffic Safety Advisory Committee (CTSAC) and Town Council for approval

- If approved, town staff will secure project funding to implement the project; or
- If not approved, residents / stakeholders will be notified.

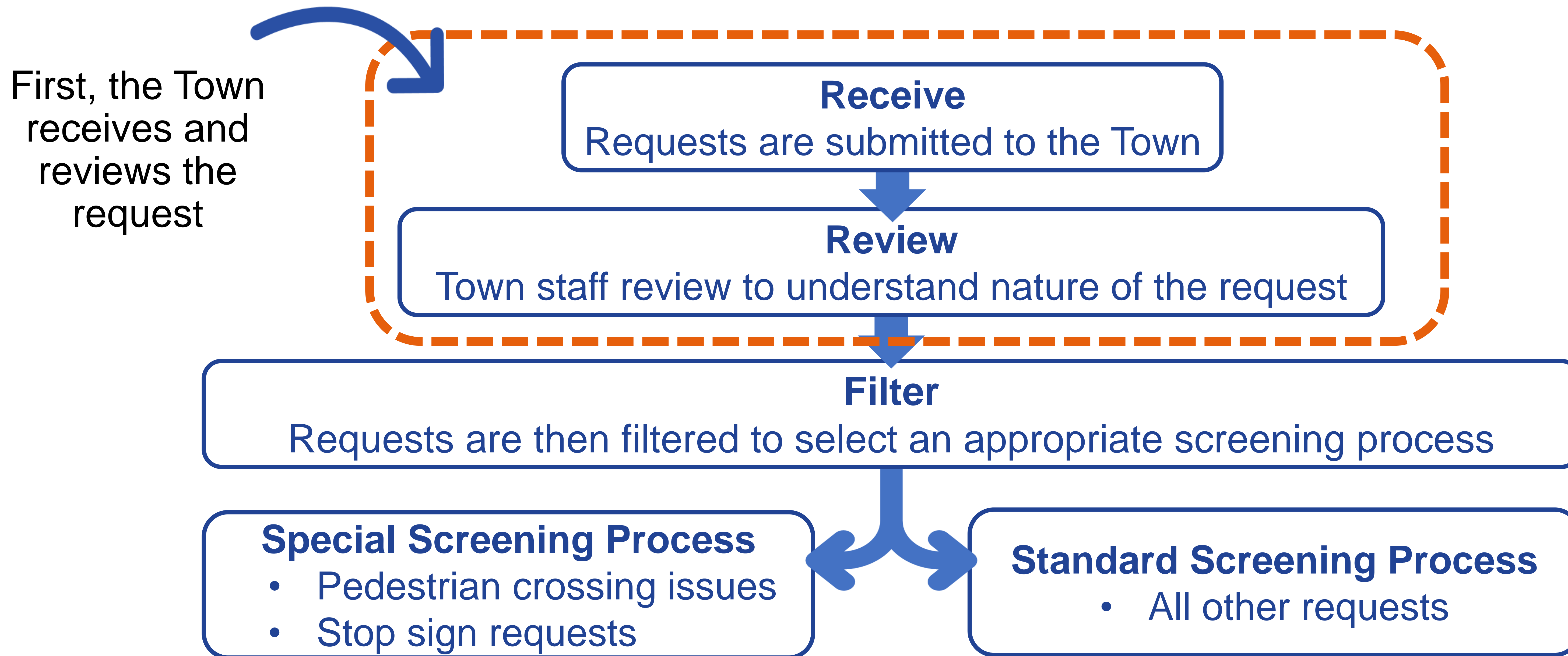
- Once funding is secured, the Town will **implement the traffic calming solution**.
- Town staff will **evaluate the effectiveness** of the traffic calming solution after 1-5 years and make modifications as necessary

## Steps 5 & 6: **Present & Implement**

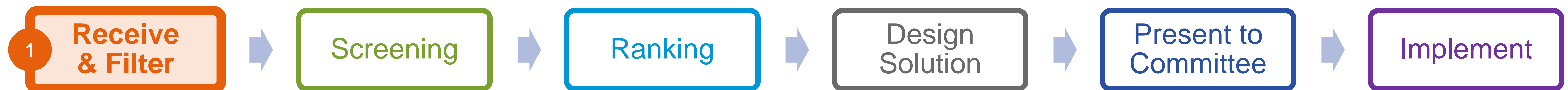


# Example #2

# Receiving Traffic Calming Requests

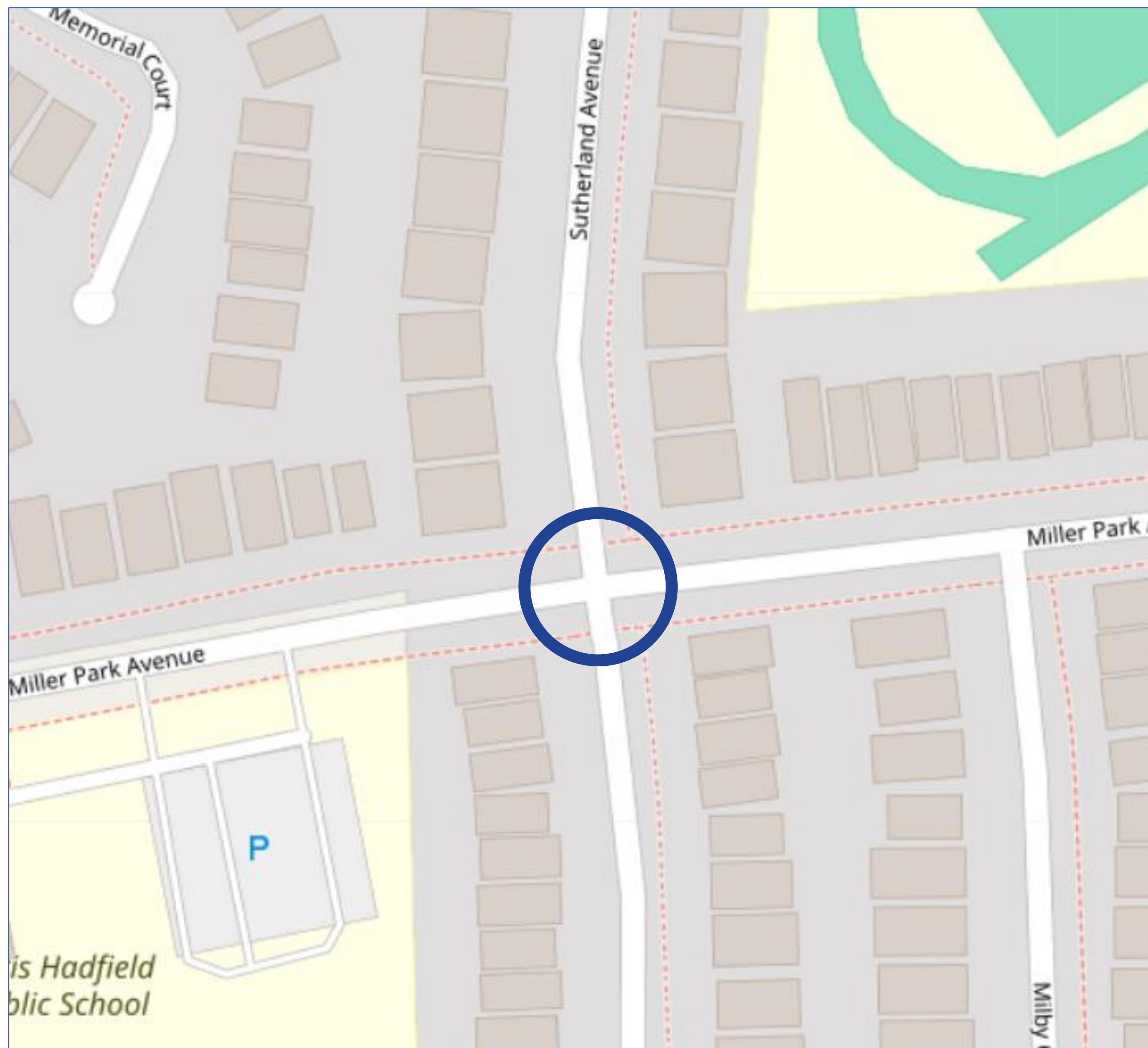


Step 1: **receive and filter traffic calming requests** submitted by the community



# Receiving Traffic Calming Requests

## Miller Park Avenue and Sutherland Avenue Intersection



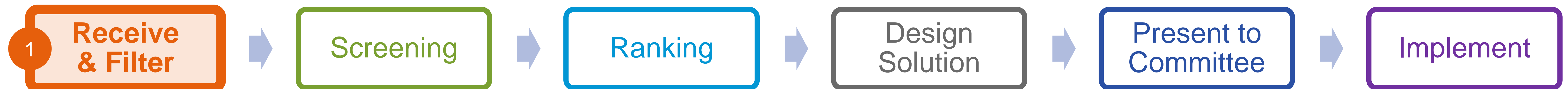
For this example, there are **concerns about walkability to / from the school** and the **number of pedestrians** using the intersection.

Here are some key details about the location:

- **Major Road type:** urban collector, within BWG
- **Minor Road Type:** urban local, within BWG
- **All Approaches Total Traffic (8 hour average):** 356 vehicles/hour
- **Major Road Pedestrian Crossings (8 hour total):** 170 Pedestrians

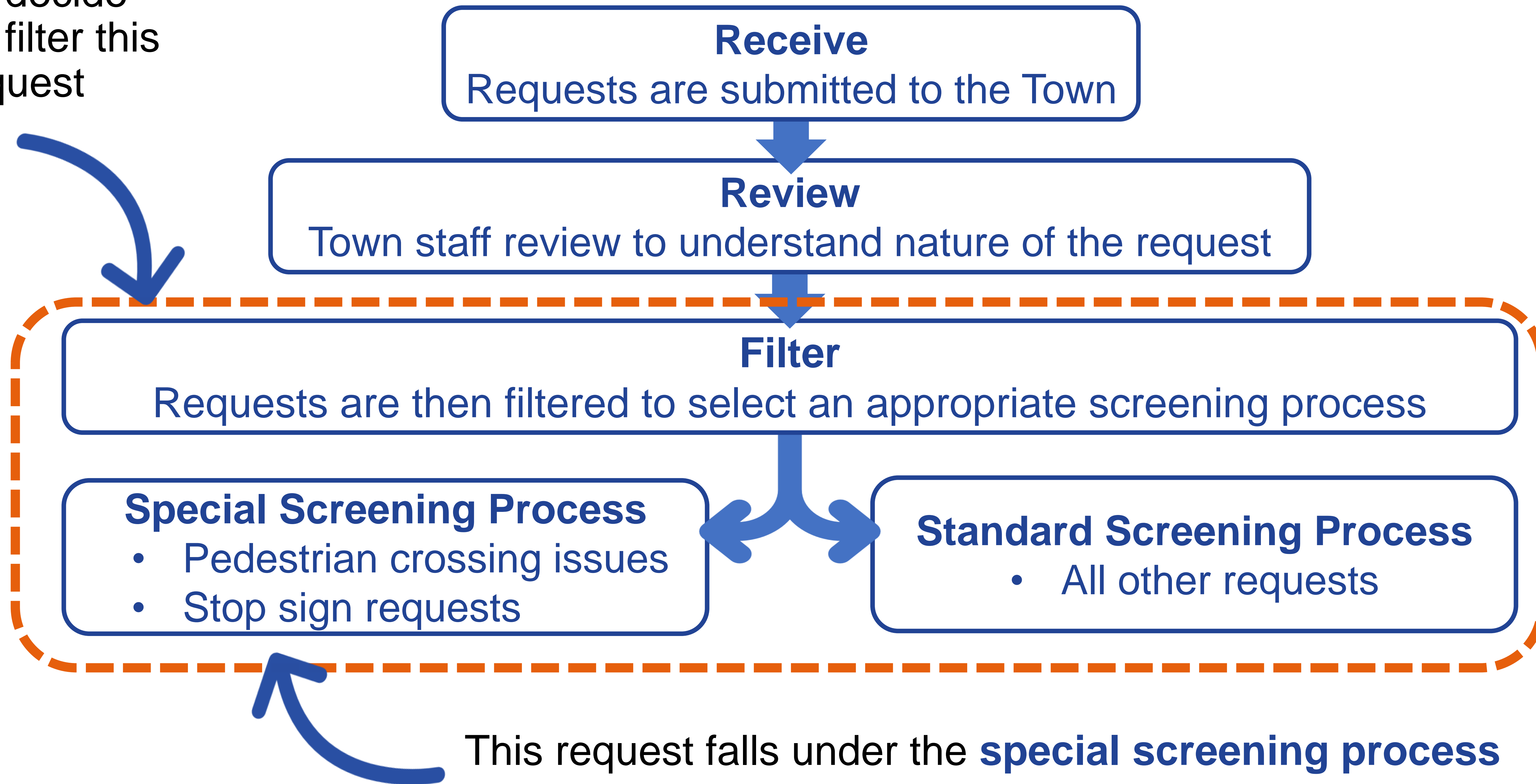
\*This example is based on 2022 data

Step 1: **receive and filter traffic calming requests** submitted by the community

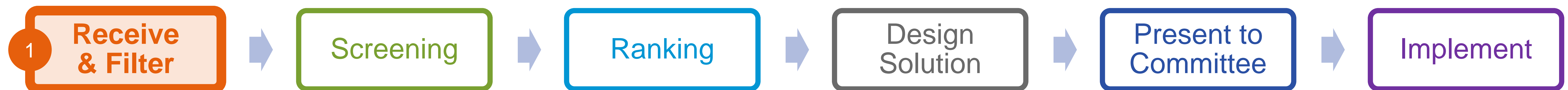


# Receiving Traffic Calming Requests

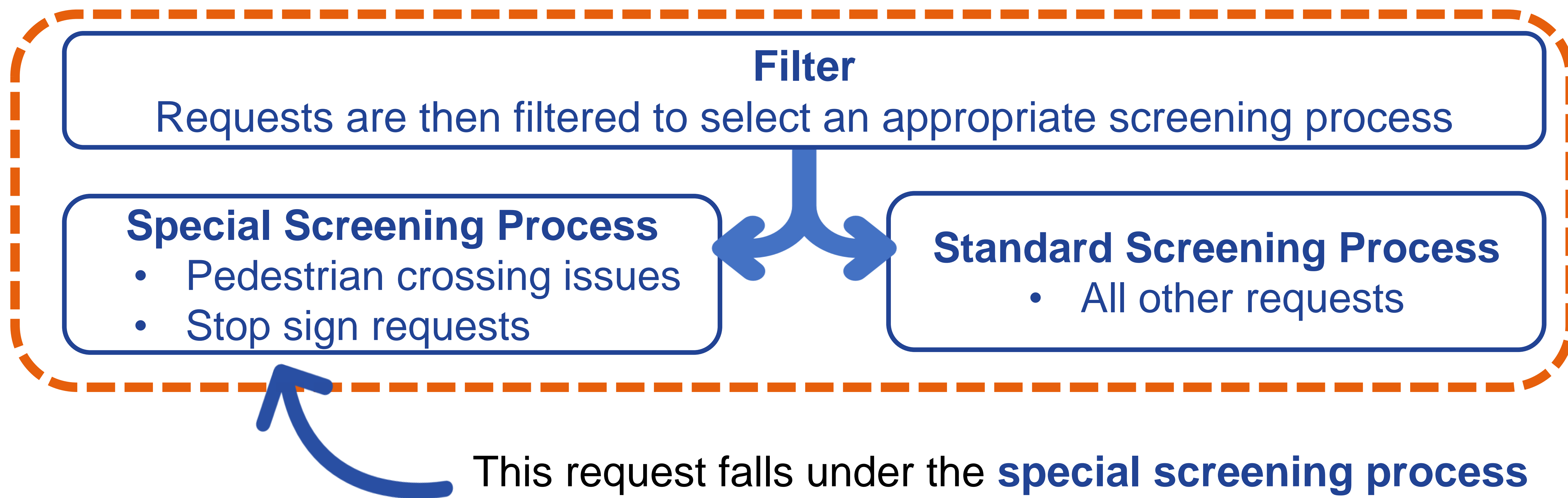
Now, the Town must decide how to filter this request



Step 1: **receive and filter traffic calming requests** submitted by the community



# Receiving Traffic Calming Requests



In this case, there is already a two-way stop on Sutherland Avenue.

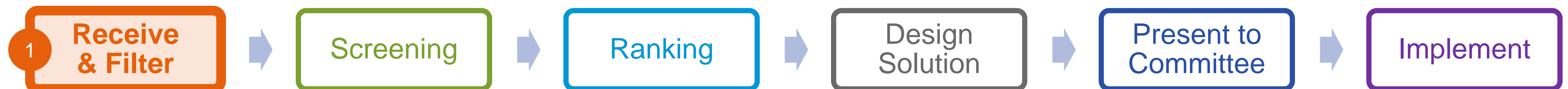
Therefore, **upgrading to an AWS or PXO across Miller Park Avenue would be more cost effective** than implementing an IPS.

This request falls under the **special screening process**

The Town would then consider the following options:

- **All Way Stop (AWS)**
- **Pedestrian Crossover (PXO)**
- **Intersection Pedestrian Signal (IPS)**

Step 1: **receive and filter traffic calming requests** submitted by the community





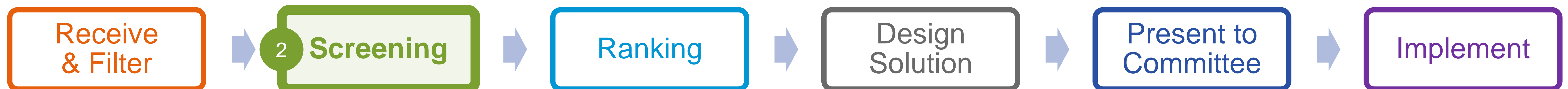
# All-Way Stop Warrant

All-Way Stop Warrant			
CRITERIA #	CRITERIA	REQUIREMENT	YES/NO
1	Volume Thresholds: Per Hour for Each of [#] Highest Hours of Day	<b>Urban Arterial: Minimum volume met?</b>	
		1.1. All approaches total: 500 vehicles / hour for all 8 hours*	
		1.2.1. Minor Road: Case 1: 200 units / hour for all 8 hours**	
		<b>OR</b>	
		1.2.2. Minor Road: Case 2: 150 units / hour for all 8 hours with average delay of 30 sec	
		<b>Collector Road and Rural Arterial: Minimum volume met?</b>	
		1.1. All approaches total: 375 vehicles / hour for all 8 hours*	
		1.2.1. Minor Road: Case 1: 150 units / hour for all 8 hours**	
		<b>OR</b>	
		1.2.2. Minor Road: Case 2: 120 units / hour for all 8 hours with average delay of 30 sec	
		<b>Local Road: Minimum volume met?</b>	
		1.1. All approaches total: 200 vehicles / hour for all 4 hours*	
		1.2. Minor Road: Case 1: 75 units / hour for all 4 hours**	
<b>All Road Types: Split within thresholds?</b>			
1.3. Volume split: does not exceed 70/30 for 8 hour period (T-intersection 75/25)			
	<ul style="list-style-type: none"> <li>• Major road counts only vehicles**</li> <li>• Minor road counts units*</li> </ul>		
2	Collision Thresholds for 3 years	<b>Urban Arterial</b>	
		2.1. 3 collisions/year over 3 years (9 collisions total)	
		<b>Local/Collector/Rural Arterial</b>	
		2.2. 4 collisions/year over 3 years (12 collisions total)	
3	Inappropriate areas	<b>All Answers Below Shall be NO to Qualify</b>	
		On multi-lane approaches?	
		Intersection has less than 3 or more than 4 approaches	
		Intersection geometry is offset / substandard	
		Stopping on steep grades?	
		Sign's stopping sight distance deficient due to horizontal curves?	
		Using for cut-through traffic issues?	
		Using to reduce speed?	
		Any other traffic control device within 250 m of stop sign?	
		Any progressive/coordinated signal timing on road within 800 m of stop sign?	
Based on OTM Book 5 (2021)		<b>DOES IT PASS THE WARRANT?</b>	

Urban Arterial, Collector Road, and Rural Arterial		
All Approaches Total	356	
Minor Road Total	155	
Volume Split	66	34

For this intersection, the minimum volume requirements are **NOT** met, so an all-way stop is **NOT** warranted.

Step 2: complete the **screening process**



# PXO Warrant

Mid-Block Pedestrian Crossing (PXO) Warrant				
CRITERIA #	CRITERIA	REQUIREMENT	YES/NO	
1	Pedestrian Network	Is there a pedestrian desire line or system connectivity requirement here?	✓	
2	8 or 4 Hour Volumes	Pedestrian volume* (8 hour total) is or greater than 100?	✓	
		<b>AND</b>		
		Vehicular volume (8 hour total) is or greater than 750?	✓	
		<b>OR</b>		
		Pedestrian volume* (4 hour total) is or greater than 65?		
		<b>AND</b>		
		Vehicular volume (4 hour total) is or greater than 395?		
3	Proximity From Another Traffic Control Device	Is the site <200 m from another traffic control device?	✓	
4	Sight Distance	Adequate sight distance for motorists and pedestrians? (i.e., motorist stopping sight distance)	✓	
5	Vulnerable Road Users	Is the concern near a school or in a community safety zone?	✓	
<b>CRITERIA #1-5 ALL ANSWERED YES?</b>				
If All Yes, Proceed to OTM Book 15 Table 7 (Pedestrian Crossover Selection Matrix)				

➔ **170 Pedestrians**

➔ **2250 Vehicles**

For this intersection, each criteria receives a “yes”. Therefore, based on the vehicle volumes, a **Level 2 Type D PXO is warranted.**

\* Pedestrian volume is the summation of unassisted pedestrians and assisted pedestrians, per OTM Book 12 and 15  
 Adjusted pedestrian volume = unassisted volume + 2x assisted volume  
 Unassisted: Adults and adolescents aged 12 or older  
 Assisted: Children under 12, senior citizens, pedestrians with accessibility needs

Due to the **proximity to a school** and direct **desire lines/operation** of the intersection, and in an effort to improve **walkability**, this item can be forwarded to the Committee for discussion on the appropriate measure or traffic control device

Step 2: complete the **screening process**

