



October 3, 2003

Paul A. Leonard  
 Township of Upper Dublin  
 801 Loch Alsh Avenue  
 Fort Washington, PA 19034-1697

RE: Parkview Gardens  
 Dundee Drive Speeding and Cut-  
 through Traffic Analysis

Dear Mr. Leonard:

Per your request, ORA has looked into traffic issues regarding Dundee Drive and Ayr Lane. It is our understanding that residents of the neighborhood believe that cut-through traffic and excessive speeding are problems in their neighborhood. The first step in the analysis is to confirm the existence of the problem.

**Speed**

The Township police placed HiStar recorders in the downhill direction at 1219 Dundee Drive in July 2003 in order to count traffic and measure speed. A review of this data indicates that although the average speed is 26 mph, a significant percentage of traffic travels faster than 10 mph over the 25 mph speed limit.

| Date                 | Time          | Total Volume | Volume > 30 mph | % > 30mph | Volume > 35 mph | % > 35 mph | Top speed range |
|----------------------|---------------|--------------|-----------------|-----------|-----------------|------------|-----------------|
| Tuesday<br>7/15/03   | 3pm – 12am    | 270          | 118             | 43%       | 41              | 15%        | 41-45 mph       |
| Wednesday<br>7/16/03 | 24 hours      | 637          | 135             | 21%       | 50              | 8%         | 41-45 mph       |
| Thursday<br>7/17/03  | 24 hours      | 625          | 215             | 34%       | 54              | 9%         | 56 – 60 mph     |
| Friday<br>7/18/03    | 12 am – 11 am | 223          | 41              | 18%       | 10              | 4%         | 46-50 mph       |
| Total Count Period   |               | 1755         | 509             | 29%       | 155             | 9%         |                 |

The fact that speeding occurs in the afternoon and nighttime as well as during the morning indicates that it is not related solely to commuters traveling to work at the Fort Washington Office Park.

Of the 1755 cars measured, a few cars (5) exceeded 45 mph. The times this occurred happened throughout the day—midnight, 3 AM, 11 AM, 2 PM, and 8PM.

Police enforcement patrols have been out periodically, but the police cannot issue a citation unless the speed is 10 mph over the speed limit. The police in fact did issue several citations.

PENNDOT's Traffic Calming guidelines state that traffic calming is typically used where the 85<sup>th</sup> percentile speed is at least 10 mph over the posted speed limit. The 85<sup>th</sup> percentile speed in the police study was 33 mph, which is close to the guideline.

The summer months are typically lower in volume due the fact that schools are not in session and August is a popular vacation month. It may be advisable to conduct another speed study in September once schools are in session and traffic is "back to normal".

The speeders may well include neighborhood residents and their visitors as well as through traffic. I observed some speeders on a Sunday afternoon, which is not a time you would expect cut-through work trips.

### **Cut-through**

The only way to confirm that the neighborhood is being used as a short-cut is by a license plate survey. This would entail recording license plates the exit and entrance points during AM and PM peak commuter hours to record license plates. We have not performed such a study. However, morning peak hour observations indicate backups on southbound Fitzwatertown Road approaching the light at Susquehanna and also on southbound Twining Road approaching the light at Susquehanna. It seems logical that traffic headed for the Fort Washington Office Center could be using local streets to avoid the light at Susquehanna & Fitzwatertown or to bypass much of the queue on Twining Road approaching the light at Susquehanna.

Figure 1 illustrates existing conditions on the cut-through route. Traffic turns right from Fitzwatertown Road or North Hills Road to Woodland Avenue. There is a traffic signal at this intersection, so it is easy for motorists to spot the turn. They travel west to Dundee Drive and turn left. The intersection of Woodland and Dundee is controlled by an All-Way Stop, but many motorists "roll through" the Stop sign. This intersection is a pedestrian crossing leading to Thomas Fitzwater Elementary School.

Cut-through motorists then travel down Dundee Drive to Ayr Lane, or alternatively, make a right onto Burn Brae Drive and travel to Ayr Lane via East Bruce Drive. Dundee Drive is a relatively steep downgrade between Woodland and Burn Brae.

Because of the pattern of the street network, motorists can avoid a traffic restriction on one street by shifting to another street. Therefore, any traffic calming effort must consider the whole neighborhood street system.

## **OVERVIEW OF POTENTIAL TRAFFIC CALMING MEASURES**

The following section describes potential traffic calming measures that may help alleviate excessive speeding and cut-through traffic.

### **Speed Reduction:**

Increased Enforcement: Increased enforcement entails use of police personnel to monitor speeds in the neighborhood. Studies have shown that enforcement operations result in appreciable speed reductions. However, speeds are usually reduced only as long as the police are present.

Variable Speed Display Board: The portable speed display board displays the driver's travel speed as well as the posted speed limit. Studies have shown that speeds are lower when the device is present and it is most effective when the device is periodically moved to different locations and used in conjunction with increased enforcement.

Speed Humps: A speed hump is a raised surface on the roadway that is typically 3-4 inches in height, and 12-20 feet in length. Studies show that speed humps generally slow traffic on residential streets to 15 mph in the vicinity of the speed hump. They are most effective when spaced in series 250 to 800 feet apart. One concern about speed humps is their effect on emergency vehicles.

Portable speed humps, also known as rubber speed humps, are typically formed from recycled rubber in 4 to 8 foot wide sections bolted to steel connector plates and anchored onto the roadway. Portable speed humps are often used in temporary installations where the hump is expected to be replaced with a permanent hump, or in test locations.

The cost for permanent speed humps ranges from \$1,500 to \$3,500 per installation. The cost for temporary/rubber speed humps ranges from \$3,000 to \$6,000 per installation. Between 6 and 10 speed humps would be needed throughout the neighborhood. Temporary speed humps require periodic inspection and maintenance; if they become dislodged they could result in liability for an accident.

Narrow the Cartway: Drivers will travel slower on a narrow road than a wider one. For example, if Dundee Drive were lined with parked cars on both sides (it is not), motorists would travel slower. Narrowing the road by changing the curblines can be an expensive proposition.

### **Volume Reduction:**

Turn Restrictions: Use of regulatory signing that prohibits certain traffic movements can be used to discourage cut-through traffic. Signs are placed at all of the neighborhood entrances. This would involve the use of standard “No Right Turn” or “No Left Turn” signs. These can be posted with time (rush hour) limitations. These restrictions are only effective when coupled with increased police enforcement.

The time restriction sign is not authorized for use with a “Do Not Enter” regulation. A “Do Not Enter” sign which prohibits a straight through movement must be in effect at all times.

One Way Restrictions: Establishing one way street segments prevents travel in one direction on a street. Although one way regulations can reduce traffic volume and discourage cut-throughs on that street, traffic volumes on the alternate routes may increase. The impact on residents must also be considered.

Semi-Diverter (Partial Diverter): The semi-diverter prevents travel in one direction on a street by blocking half the street with a physical barrier. This provides self enforcement of a one way restriction. By eliminating movements, semi-diverters serve to reduce through traffic. Although semi-diverters can reduce traffic, traffic volumes on the alternate routes may increase. Semi-diverters would need to be carefully placed to discourage cut-through traffic while minimizing the impact to local residents. Costs range from \$3,000 to \$20,000 per installation depending on the design.

Full Diverter: The diverter is a physical barrier which extends diagonally across an intersection, and prevents through movements in either direction. This barrier can be curb, a raised island, or immovable objects such as heavy planter boxes spaced so that a vehicle cannot pass through. The barrier must have openings for drainage in order to prevent ponding. The effect of diverters on emergency vehicle traffic must be carefully considered.

### **ALTERNATIVES**

ORA has developed two concepts for traffic calming in the Parkview Gardens neighborhood based on examination of available data from the police and field views of the neighborhood streets. These are first-cut ideas. I am sure that the people who live in the neighborhood and the Commissioners and Township staff will have comments to improve the concepts.

#### **Diverter Alternative**

Figure 2 illustrates the concept which we think would most effectively prevent cut through traffic. All through traffic passes through the intersection of Dundee and Burn Brae. Under this concept, a physical diverter would be installed that would prevent this through movement.

Traffic from Woodland Avenue headed south on Dundee would be directed back to Fitzwatertown Road on Burn Brae Drive. Traffic entering Burn Brae from Fitzwatertown would be directed north on Dundee toward Woodland. All approaches to the intersection would be signed with a Stop sign because of the restricted width for turning traffic through the intersection.

Internal neighborhood trips that make use of the through movement along Dundee Drive or along Burn Brae Drive could still reach their destination, although with a more roundabout trip.

In order to prevent cut through motorists from trying a different route through the neighborhood, several locations could be posted with turn restrictions (effective during the morning peak period, say from 6:30 am – 9:30 am).

- No Right Turn from southbound Fitzwatertown Road to Alpin Drive
- No Left Turn from Alpin Drive to Dundee Drive
- No Left Turn from Dundee Drive to E. Bruce Drive

The AM No Left Turn restrictions are to discourage cut-through traffic from trying to get to Ayr Lane or Bruce Drive by turning from Fitzwatertown Road into Burn Brae Drive and traveling via Duncan Drive or Glenburnie Lane to Alpin Drive.

Because the diverter would be in effect at all times, and the main beneficiaries are residents of Dundee Drive, Burn Brae Drive and East Bruce Drive, all neighborhood residents would need to be involved in a discussion of whether the strategy is beneficial overall.

Assuming that it is necessary for fire trucks to travel through on Dundee Drive, the diverter would have to be designed to allow this. One possible way would be to use flexible posts for part of the diverter. In an emergency, the fire truck would drive over them and damaged posts would be replaced later. A second possibility is to use a locked sliding gate or chain for part of the diverter. In an emergency, the crew would open the gate or take down the chain. In either case, the emergency vehicle path should be only about 10 feet wide and on the northbound side of Dundee.

A photo of the intersection of Dundee and Burn Brae as it is today and an illustration of how it might look with the diverter concept are attached.

### **Cartway Width Restriction Alternative**

This alternative would construct islands in the middle of Dundee Drive and Burn Brae Drive at strategic locations. The objective of this alternative is simply to reduce speed. This strategy would probably not reduce cut-through traffic volume.

A photo of an installation of this type is attached. The illustrated location is in Hillsborough County, Florida and included speed humps at the islands.

Figure 3 shows suggested locations for islands on Dundee Drive and Burn Brae Drive.

**Improvements at Signalized Intersections**

Traffic which is cutting through the Parkview Gardens neighborhood is trying to avoid backups and delays at the signalized intersections on Susquehanna Road, i.e. at Susquehanna and Fitzwatertown Road and/or at Susquehanna and Twining Road. If delays were reduced for traffic heading toward the Fort Washington Office Center in the morning peak hours, the incentive to cut through the neighborhood would be reduced.

This study has not looked in detail at the signalized intersections. Regardless of action taken on the local streets, the traffic signal operations should be examined to see whether delays on southbound Fitzwatertown Road and southbound Twining Road might be reduced through improved morning peak timing plans.

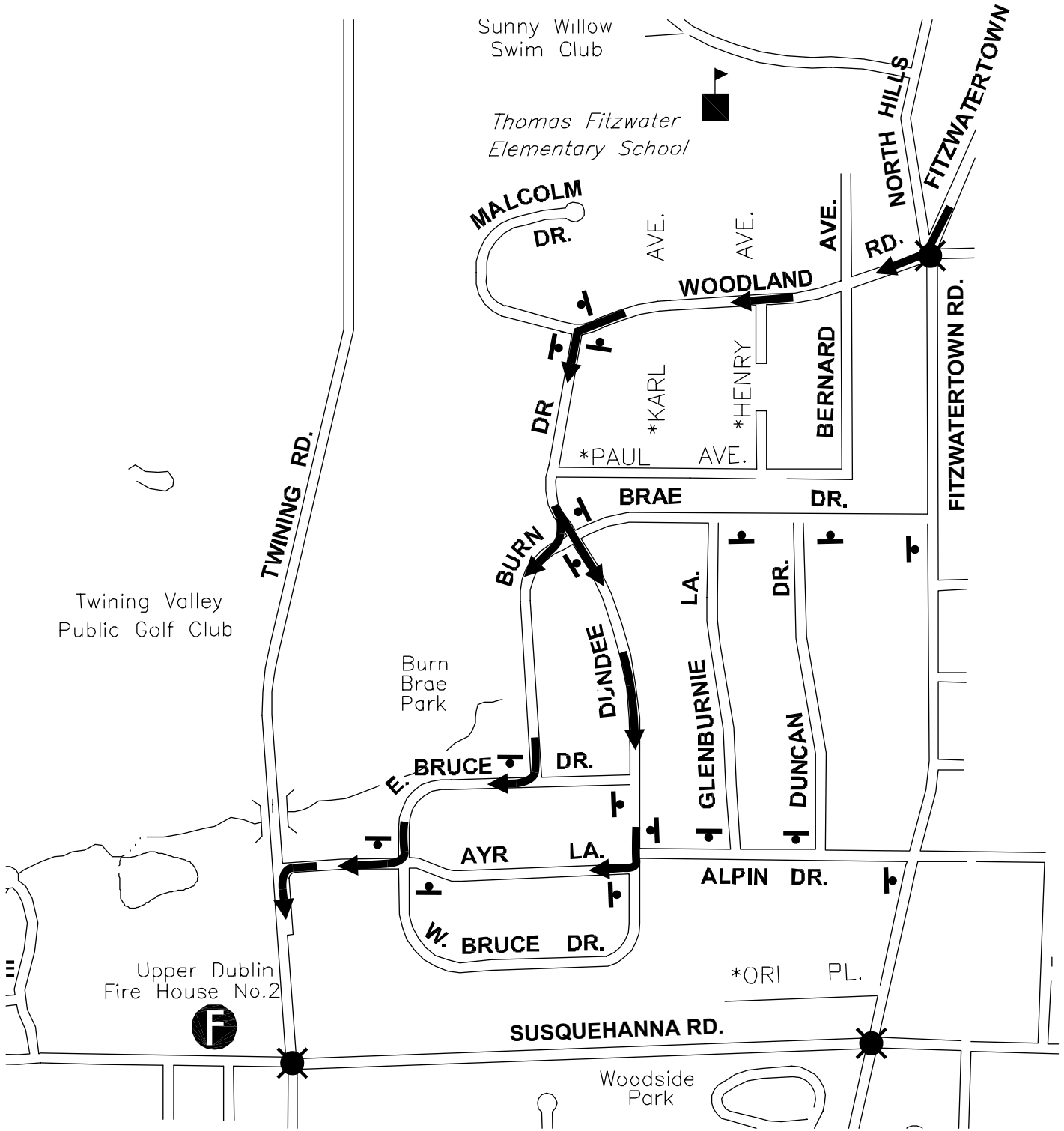
I will attend the Commissioners' meeting on October 7 to present the information and answer questions.

Very truly yours,




ADRIENNE EISS  
Senior Project Manager



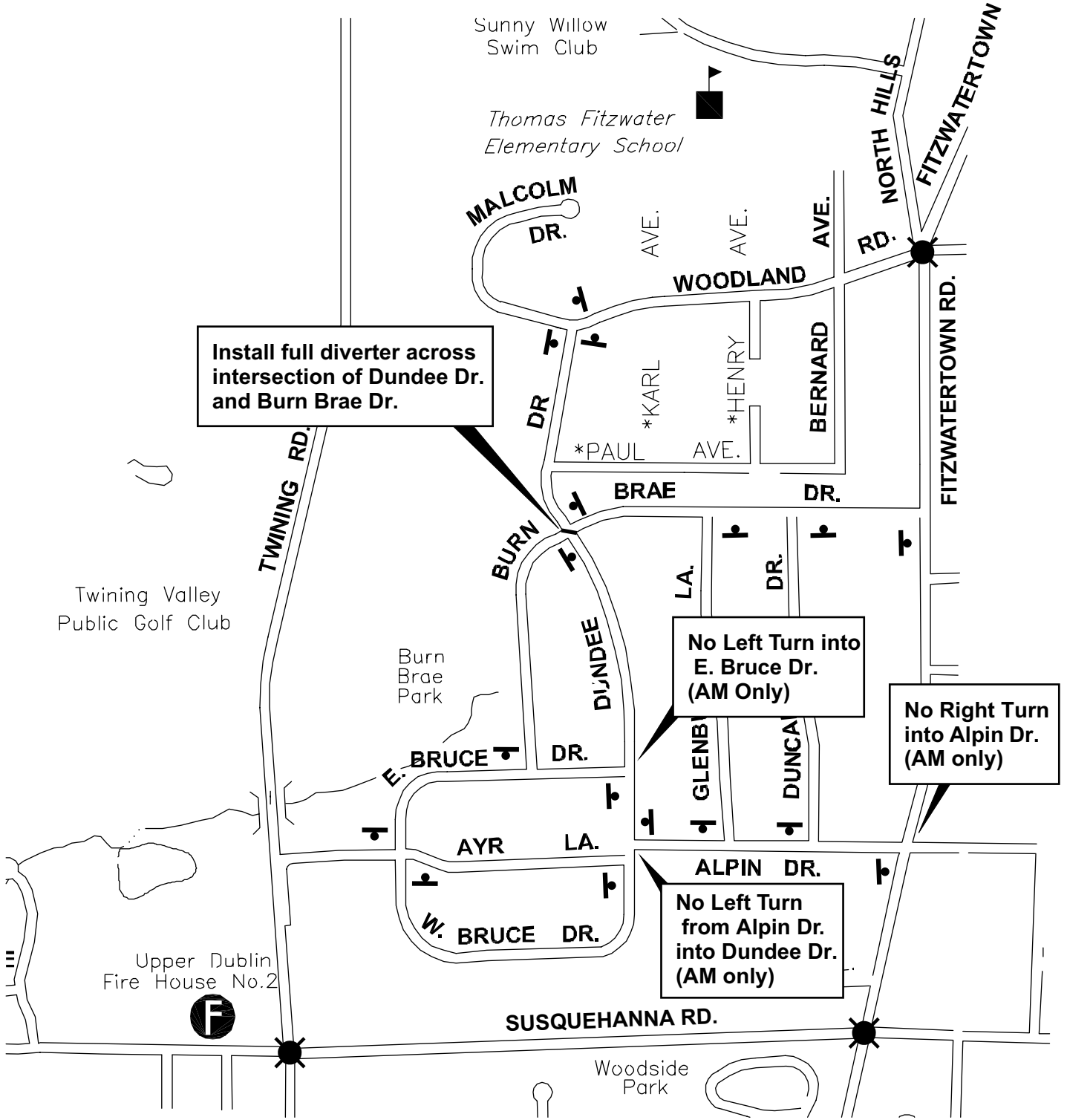
**Existing Conditions**  
**Parkview Gardens**  
UPPER DUBLIN TOWNSHIP





**LEGEND**

-  - EXISTING TRAFFIC SIGNAL
-  - EXISTING CUT-THROUGH ROUTES
-  - EXISTING STOP SIGN

**Diverter Concept**  
**Parkview Gardens**  
UPPER DUBLIN TOWNSHIP



**LEGEND**

-  - EXISTING TRAFFIC SIGNAL
-  - EXISTING STOP SIGN



View of Dundee Drive southbound approaching intersection of Burn Brae Drive



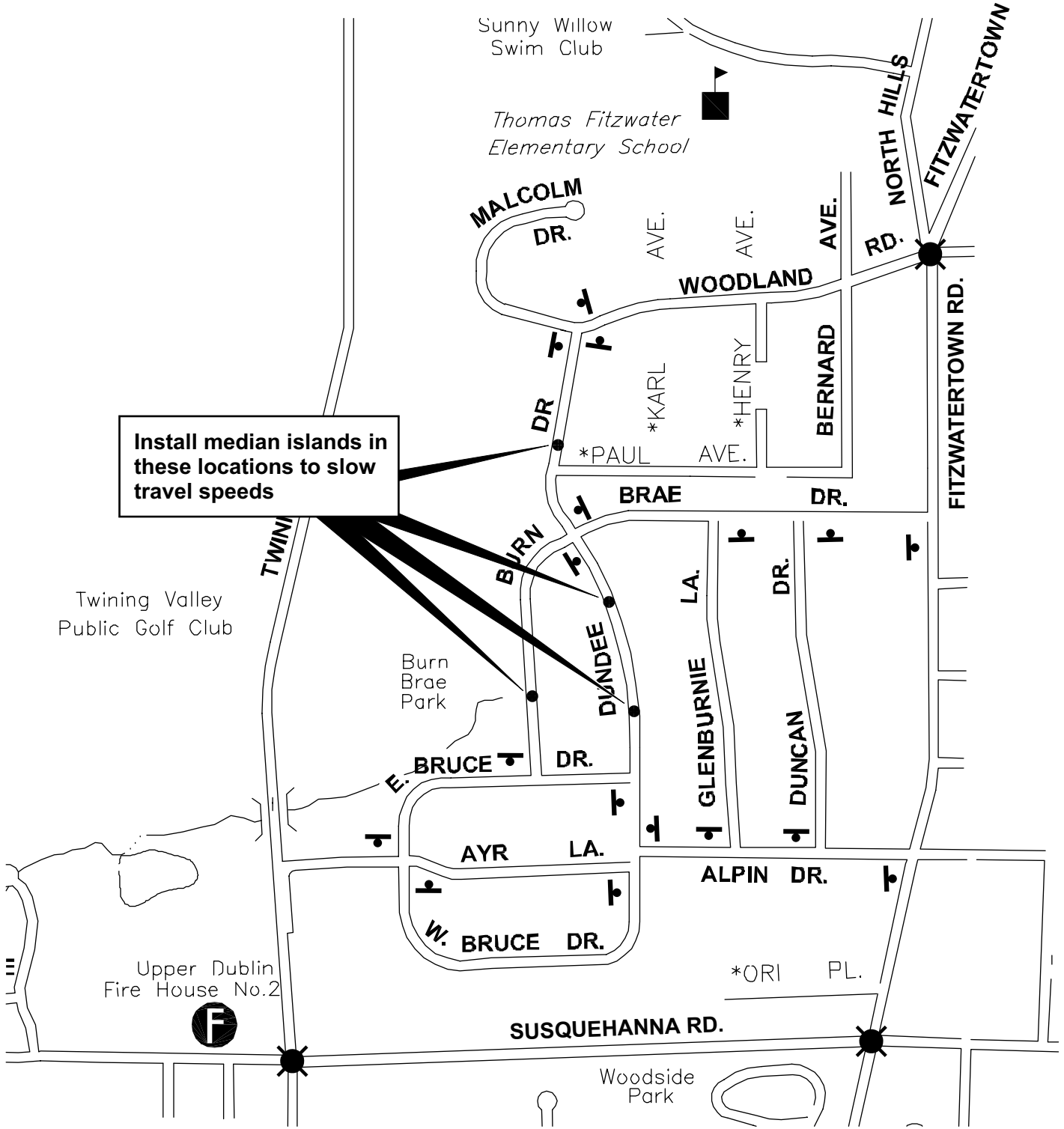
Diverter concept would direct Dundee Drive traffic in both directions to turn left on Burn Brae, with All-Way Stop. Emergency vehicle access through orange flexible posts on left.





# Narrowed Cartway Concept

## Parkview Gardens

### UPPER DUBLIN TOWNSHIP



**LEGEND**

-  - EXISTING TRAFFIC SIGNAL
-  - EXISTING STOP SIGN



Island in center of residential roadway narrows the cartway



Island combined with speed hump to further reduce speed