INTERSECTION REDESIGN SHORE ST / PORTOBELLO RD

Problem

✓ Lack of safe connection for vulnerable road user who are pedestrians and cyclists.
✓ Higher number of crash record at the intersection turns and especially for cyclists.
✓ The lane length between the adjacent intersection – Portsmouth Drive / Portobello Road is just about 90 meters. Due to this short distance, vehicles driving from Peninsula try and continue via Portobello Rd south. For this is to happen vehicles need to change their lane to left from right lane which opens the possibility of weaving crash as the distance covered is very short.
✓ The existing LOS for the right leg of Shore St presently has a value of F during peak hour traffic which is causing delays and impedes the through traffic leg at Shore Street.
✓ Currently, the intersection is highly efficient except with right turn traffic having LOS F. Other legs of the intersection have LOS A, but unsafe for cyclists and pedestrians. What is the best redesign for this intersection?
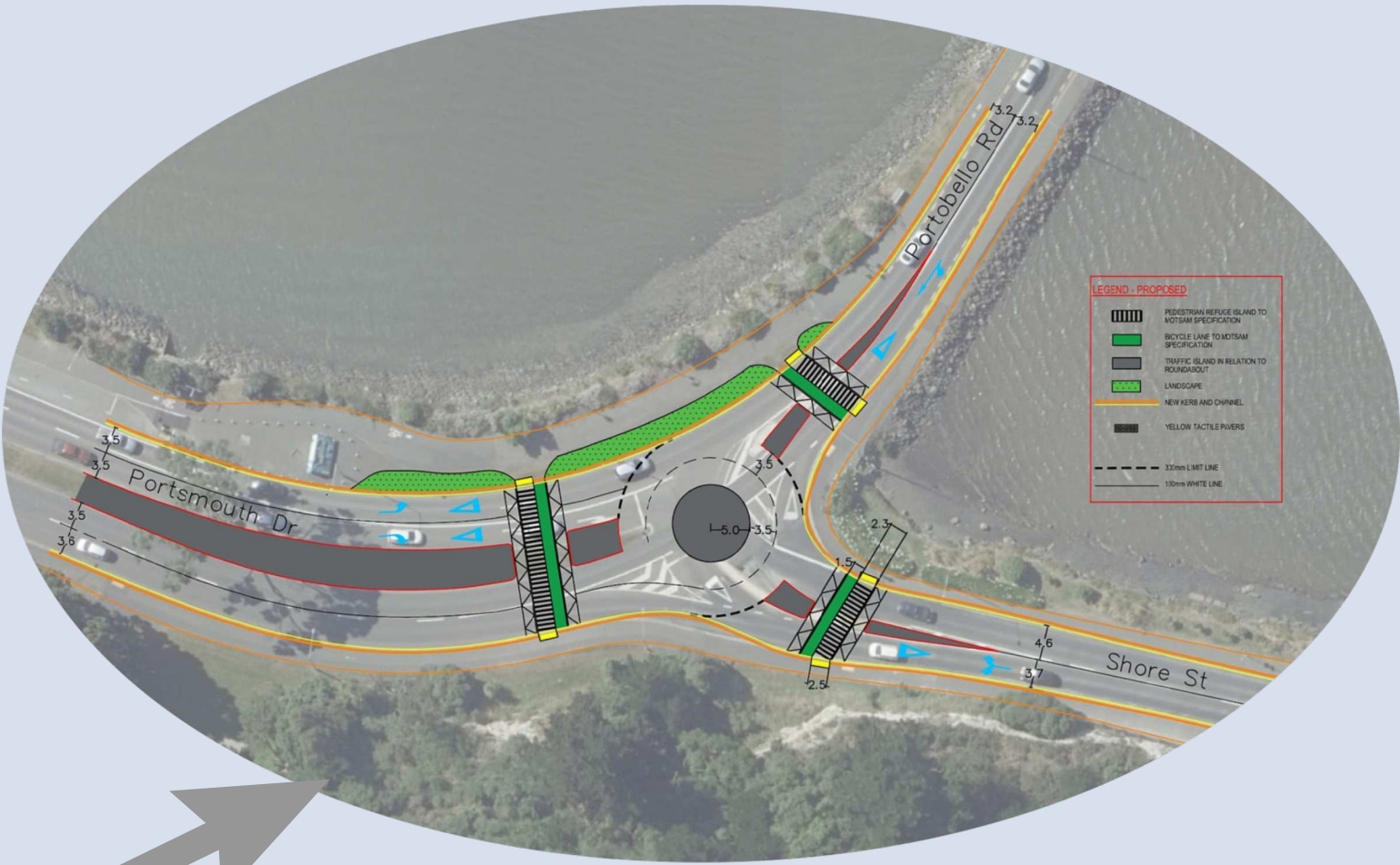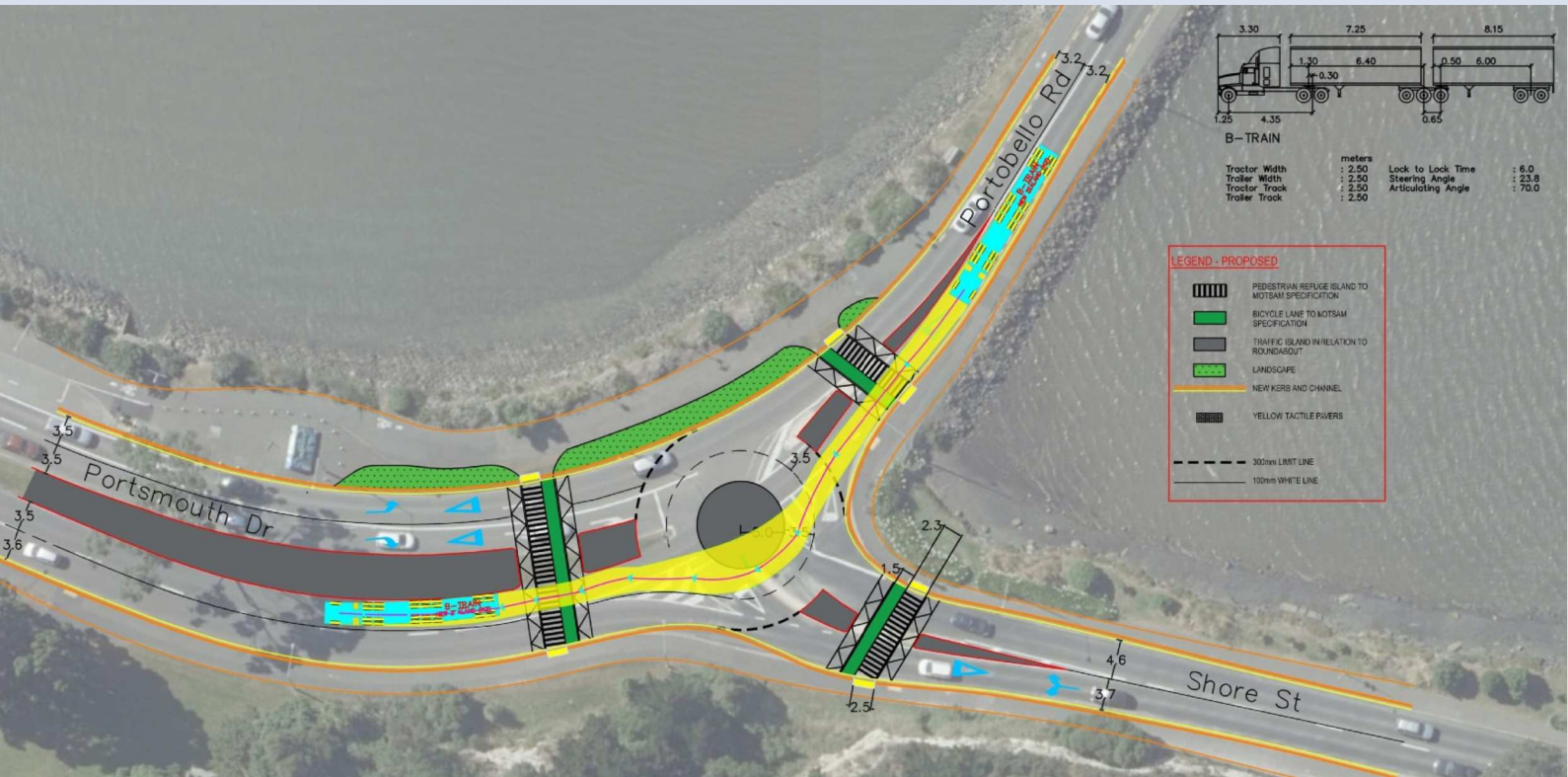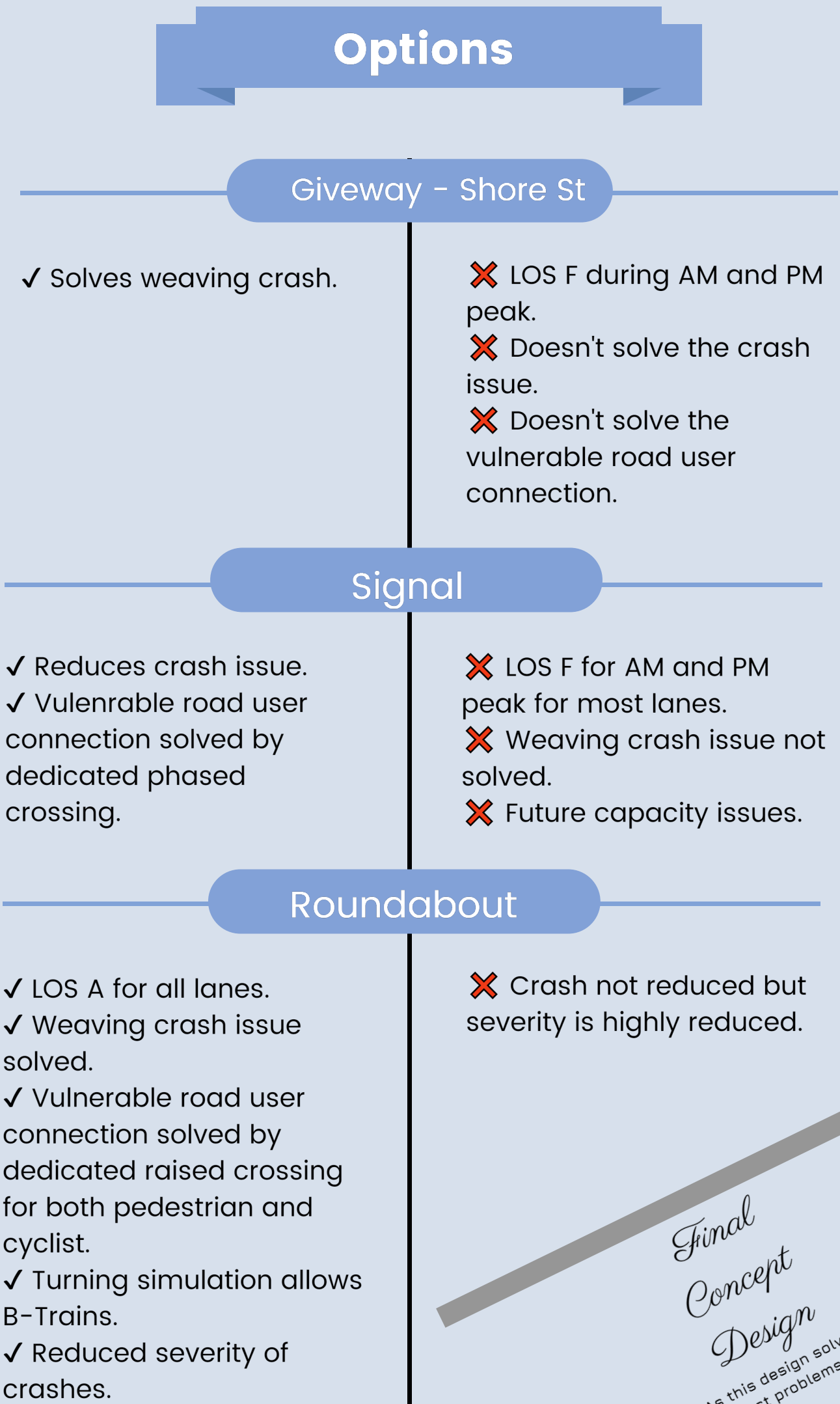
Method Of Solving

✓ Tracking down any older measures that were implemented.
✓ NZTA Crash Analysis System to pull out all relevant crash details.
✓ Referring NZTA Mega Maps to check safe and appropriate speed for all legs of the intersection.
✓ Traffic data collection.
✓Generating existing model using Sidra Solutions 9.0.
✓ Analysis of suitable standard designs through Sidra Solutions.
✓ Designing the best standard design using Civil 3D & by using the Austroads roundabout design guide.
✓ Simulating vehicle movements using Autoturn to check if the proposed design suits all types of expected vehicles that might use the path.

Existing condition of Intersection

United Nations Sustainable Development Goals Met

Options

Giveway - Shore St

✓ Solves weaving crash.

✗ LOS F during AM and PM peak.
✗ Doesn't solve the crash issue.
✗ Doesn't solve the vulnerable road user connection.

Signal

✓ Reduces crash issue.
✓ Vulenrable road user connection solved by dedicated phased crossing.

✗ LOS F for AM and PM peak for most lanes.
✗ Weaving crash issue not solved.
✗ Future capacity issues.

Roundabout

✓ LOS A for all lanes.
✓ Weaving crash issue solved.
✓ Vulnerable road user connection solved by dedicated raised crossing for both pedestrian and cyclist.
✓ Turning simulation allows B-Trains.
✓ Reduced severity of crashes.

✗ Crash not reduced but severity is highly reduced.

Final Concept Design
As this design solved most problems.

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Year 2020**