

Number	Option Name
1	Consolidated retail park in Prince Rock
2	Expanded Sainsbury store
3	Consolidated commercial development at Marsh Mills
4	Making best use of site at Blagdons
5	Relocation of Heywoods Pavings
6	Landmark buildings
7	Artworks
8	Residential Development at Mount Gould
9	Transfer Midas application to Heywood site
10	Relocation of non conforming industrial uses to Cattedown/Marsh Mills
11- 13	Land reclamation along River Plym
14	Open space strategy: Green fingers to waterfront
15	Open space strategy: improvements near Laira depot
16	Development of Prince Rock Playing Fields
17	Laira open space strategy: Laira open space bridge
18	Bus lanes
19	Bus Priority Package
20	Enhanced Pedestrian and Cycle Network
21	Improvements to Embankment Road
22	Cycle route
23	Laira Bridge - operational modifications
24	Additional Bridge over the River Plym
25	New Local Relief Road to bypass Gdynia Way
26	Development on St Boniface playing fields
27	Traffic Management: localised measures on residential streets
28	Demand Management: Laira Bridge tolls
29	Embankment Road relief road
30	Construction of a road link from Embankment Road to Finnigan Road
31-32 and 41	LRT
33	New corniche road around Cattedown peninsular
34	Ferry
35	Living bridges over Gdynia Way
36	Heles Terrace bus priority
37	Reduce Impact of Network Rail Sidings
38	Construction of a tidal gate
39	Rail Capacity Improvement
40	Rail Improvements to Passenger Traffic
42	Relocation of Prince Rock School
43	Riverside park or promenade
44	Community Transport
45	New road along rail line to Friary Yard
46	Mitigation of Pylons

Table 2: Initial Measures

3 Study Process

3.1 Initial Measures

With the main study issues in mind, the consultant team developed a long list of possible measures or actions. No constraint was put on the level of intervention the measure might require, nor on the costs or feasibility of implementation. The exercise was simply to produce the widest range of measures possible. Table 2 sets out the full list of initial measures or possible actions.

In addition to the measures outlined in the table, there are a number of baseline events, either planning permissions or regional policy aspirations which are planned for the area. These can be divided into a number of types:

1. Current policy, for example residential and employment allocations, such as Plymstock Quarry. These policy commitments and their implications have been factored into all considerations.
2. Planning permissions which will go ahead as they are in line with the overall vision for the study area such as The East End Community Resource and Enterprise Centre at Cattedown. These have been factored in to all considerations.
3. Planning permissions or applications which the consultant team do not think are compatible with the Gateway Vision, such as the extant planning commitments permission at the Salmon Harvester site (former bus depot) for non-food retail. (These have been included in the “Do Minimum” Option in Chapter 4 only)

03 Study Process

3.2 Development of Options

The measures set out in the section above were then combined to create four initial options and finally amalgamated to result in three development concept options representing three levels of intervention:

- Option 1 - Do-Minimum Option
- Option 2 - Intermediate Option
- Option 3 - Do-Maximum Option

Furthermore two additional categories of intervention were established:

- 'The Add-ons': These are individual actions that are not a central or integral part of each Option, yet may be "bolted-on" as an additional development proposal;
- 'The Must Dos': These are actions that the study team consider crucial for the study area, no matter what level of intervention is required.

The Must-Dos are listed in Table 3 and illustrated in Figure 3.1. Further information regarding the earlier stages of work are given in Appendix 2: Stage 2 Option Development.

The options presented in the following chapters represent three levels of intervention. The Do-Minimum Option presents minimal transport and environmental improvements. The Intermediate Option presents a more proactive approach and an intermediate level of intervention. It includes creating a southern route into the city centre thereby attempting to reduce congestion in the existing communities. It also presents a more interventionist approach towards landuse throughout the area, especially along the waterfront.

The Do-Maximum Option is the most proactive option and represents the highest level of intervention of the three options. It includes many of the measures included in the Do-Minimum and the Intermediate Options, but provides a new northern link into the city centre and a new bridge over the River Plym, with partial separation of public transport from general traffic.

The options are set out in detail in the following chapters.

3.3 Transport Issues

3.3.1 Paramics Transport modeling

Nine model network scenarios were tested which range from minimal intervention to the most proactive, in order to achieve an understanding of the level of intervention required to improve conditions in the area. These are set out in Table 4. A wide range of scenarios were tested because within each development concept there were many possible traffic measures and combinations of traffic measures. The tests were structured to identify the effects of different measures.

Particular model tests may be relevant to more than one development concept option. However there is no direct correlation between any single model test and one concept option.

3.3.2 Conclusions from Test Results

The Do-Minimum Option is created by a mixture of Test 1 and Test 3a. Test 3b is closest to the Intermediate Option and model Test 8 is the closest test for the Do-Maximum Option.

All the tests show that any scheme will be a compromise between reducing traffic volumes on the sensitive residential routes and maintaining journey times for buses and private vehicles. At present the area generally works well in terms of traffic flow for through

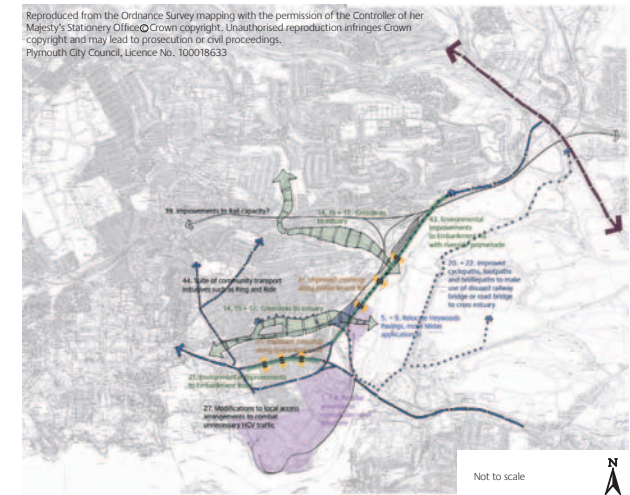


Figure 3.1: The 'Must-Do' actions

Must Dos: These individual actions must be part of an adopted strategy:

- Positive planning to consolidate retail structure;
- Relocate Heywoods Pavings and Midas application;
- Create green links to the estuary;
- Improve cycle paths, footpaths and bridleways to make use of disused railway bridge or road bridge to cross the estuary;
- Improve crossings along Embankment Road;
- Environmental improvements to Embankment Road;
- Modifications to local access arrangements to combat unnecessary HGV traffic;
- Improvements to rail capacity;
- Environmental improvements to Embankment Road with riverside promenade;
- Suite of community transport initiatives.

Table 3: The 'Must-Do' actions. These apply whatever concept for development is chosen.

movement and it is hard to maintain this level of service when creating new junctions that are not grade-separated.

It is worth noting that there are periods of severe congestion. Without any action, future traffic demands will make this a more frequent and lengthy occurrence.

The Do-Minimum test gives better accessibility for pedestrians and cyclists in terms of crossing the major routes through the area, removes HGVs from Heles Terrace and enhances traffic flow on Heles Terrace. However, it does nothing to remove traffic from Embankment Road and will slow vehicle and bus journeys through the Gateway.

Test 3b (the Intermediate Option test) does not attempt to reduce traffic volumes on Embankment Road but only Heles Terrace. It does not involve as much infrastructure as Test 8 and does not perform as well in terms of journey times and vehicle speeds. It does however have a significant positive effect on Heles Terrace traffic volumes. With extra engineering work to create better junctions at either end of the relief road, the model may show traffic flow that is more in line with present conditions. The most important negative aspect of this test is that congestion is likely to continue at the western end of Laira Bridge.

Test 8 removes the majority of through traffic from Heles Terrace and Embankment Road whilst maintaining overall average journey times for vehicles, although journey times for some routes increase by up to 33%. Bus journey times also suffer but to a lesser extent.

It is apparent that Test 8, which is recommended for the Do-Maximum Option, has clear advantages over the other tests. Indeed, it is the only test which has any significant effect on the transport situation in the area. In the following chapters we have assessed each

development concept according to the three criteria established in the previous chapter. However, given the importance of transport issues in the gateway, the model tests are an early indicator of the level of intervention required to achieve a step change in the area.

3.3.3 Future Traffic Pressures

The tests referred to and documented in the previous section have been undertaken using 2002 traffic demand levels. Some additional testing was undertaken using an estimate of future demand level in 2016. This exercise was consistent with work previously undertaken by SIAS using the wide area Plymouth TTWA Paramics Model for technical inputs to the recent Draft Structure Plan EIP. This exercise modelled predicted traffic growth resulting from proposed housing and employment developments around Plymouth, as well as natural traffic growth in line with the National Road Traffic Forecasts.

Once the 2002 matrix had been factored to these new higher levels for 2016, model runs were carried out and statistics produced on bus and vehicle journey times, vehicle speeds and traffic volumes. These were then compared with the 2002 runs to show the level of change expected from future traffic growth. The future runs were carried out only for the Base and Test Networks 3a, 3b and 8.

As would be expected vehicle speeds, bus journey times and vehicle journey speeds all increased using the future year modeling work. Tables showing the results of the tests are given in Appendix 4.

These results confirm the belief that the traffic congestion problems of the area must be addressed at a city -wide level. The testing undertaken concerns itself with the study area only. Clearly the transport solutions for the study area, if congestion is to be addressed in the long term, must be part of wider thinking.

	Test 1	Test 2	Test 3a	Test 3b	Test 4	Test 5	Test 6	Test 7	Test 8
Increased green signal times for pedestrians on Embankment Road and Laira Bridge	●	●	●	●					
HGV restriction on Heles Terrace and new junction on Gdynia Way	●	●	●	●	●	●	●	●	●
New Bus lanes on Laira Bridge and Embankment Road		●							
Widening Heles Terrace			●						
Speed reduction along length of Embankment Road			●						
Laira Rail bridge used for public transport			●	●	●	●		●	
Heles Terrace bypass road				●	●	●	●		
Gdynia Way becomes two way route					●				
Through traffic barred from Embankment Road (W), becomes buses and access only					●	●	●	●	●
Southern bypass road						●	●		
Gdynia Way as one way route for inbound traffic from Embankment Road						●			
New Laira Bridge for traffic between Plymstock and the city							●		
Northern bypass running along former rail line to Friary Park								●	●
New roundabout connecting Embankment Road and Northern bypass								●	●
New bridge crossing the Laira from Pomphlett Roundabout to Embankment Road									●
Through traffic barred from Gdynia Way									●

Table 4: Paramics Traffic Model network tests undertaken