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Adroddiad

Report

Ymchwiliad a gynhaliwyd ar 11-14, 18-21, 25-28/10/07 & 2-5/10/07

Inquiry held on 11-14 , 18-21, 25 - 28/09/07 & 2-5/10/07

Ymweliadau â safle a wnaed ar 10 & 11/10/07

Site visits made on 10 & 11/10/07

gan/by N R Taylor BSc CEng MICE MIHE

Arolygydd a benodwyd gan y Gweinidog dros yr Economi a Thrafnidiaeth, un o Weinidogion Cymru

an Inspector appointed by the Minister for the Economy and Transport, one of the Welsh Ministers

Dyddiad/Date **25/02/08**

THE HIGHWAYS ACT 1980

ACQUISITION OF LAND ACT 1981

THE DOLGELLAU TO SOUTH OF BIRKENHEAD TRUNK ROAD (A494) (DROME CORNER TO EWLOE IMPROVEMENT) CONNECTING ROAD AND SLIP ROAD ORDER 200_

THE DOLGELLAU TO SOUTH OF BIRKENHEAD TRUNK ROAD (A494) (DROME CORNER TO EWLOE IMPROVEMENT SIDE ROADS) ORDER 200_

THE NATIONAL ASSEMBLY FOR WALES (THE DOLGELLAU TO SOUTH OF BIRKENHEAD TRUNK ROAD (A494) DROME CORNER TO EWLOE IMPROVEMENT) COMPULSORY PURCHASE ORDER 200_

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TABLE OF CONTENTS

CASE DETAILS **1**

1 PREAMBLE **2**

2 DESCRIPTION OF THE SITE AND ITS SURROUNDINGS **4**

3 LEGAL/PROCEDURAL SUBMISSIONS **5**

4 THE CASE FOR THE WELSH ASSEMBLY GOVERNMENT **6**

BACKGROUND 6
THE NEED FOR THE SCHEME 9
POLICY 10
National Policy *10*
Regional Policy *16*
Local Policies *16*
THE SCHEME 18
Existing Road Layout *18*
Description of the scheme *19*
Construction Programme *25*
TRAFFIC AND ECONOMIC ASSESSMENT 27
Accident data *28*
Traffic Modelling Methodology *28*
Model Validation *28*
Traffic Forecasting Methodology *29*
Present Traffic Conditions *31*
Accidents *32*
Future Traffic Volumes *33*
Future Traffic Conditions on Local Road Network *35*
ECONOMIC ASSESSMENT OF THE SCHEME 37
Overall Economic Assessment *39*
ENVIRONMENTAL ASSESSMENT 39
Air Quality *40*
Ecology and Nature Conservation *45*
Landscape and Visual Impact *47*
Land Use *49*
Noise and vibration *50*
Pedestrians, cyclists and community effects *54*
Geology and soils *55*
Surface water quality and drainage *56*
Hydrogeology and contaminated land *56*
Cultural heritage *56*
Impacts on vehicle travellers *56*
Impact on policies and plans *57*
SUMMARY 58
MODIFICATIONS 58

5 THE CASE FOR THE SUPPORTERS **59**

WRITTEN LETTERS OF SUPPORT 59

6 THE CASE FOR THE OBJECTORS **60**

FLINTSHIRE COUNTY COUNCIL (OBJECTION NO. 194) 60
MISS S SHENTON (OBJECTION NO. 108) 62
MR M ISHERWOOD AM (OBJECTION NO. 279) 64
MRS S MEWIES AM (OBJECTION NO. 193) 66

MR C SARGEANT AM (OBJECTION NO. 192) 67
CLLR C ELLIS (OBJECTION NO. 146) 69
CLLR H GAMBINO (OBJECTION NO. 310) 70
CLLR G HARDCASTLE (OBJECTION NO. 634) 70
CLLR P HEESOM (OBJECTION NO. 312) 71
CLLR M WARBURTON (OBJECTION NO. 1883) 72
CLLR E JONES (OBJECTION NO. 601) 72
MISS N FROST (OBJECTION NO. 640) 73
MR N HOWELL (OBJECTION NO. 43) 74
THE EWLOE GREEN A55 ACTION GROUP (OBJECTION NO. 7) 76
MR J GRAY (OBJECTION NO. 313) 77
MR C MARTIN (OBJECTION NO. 46) 78
MR D NORRIS (OBJECTION NO. 326) 78
MR P DAVIES (OBJECTION NO. 309) 80
MR D MAWDSLEY (OBJECTION NO. 590) 81
MR M FARROW (OBJECTION NO. 465) 82
MRS J HOUGH (OBJECTION NO. 1613) 83
MRS J WILLIAMS (OBJECTION NO. 1122) 84
MR P BUCHANAN (OBJECTION NO. 570) 85
MR D MACKIE (OBJECTION NO. 1881) & MR B MILLER (OBJECTION NO. 614) 86
MR J MALONEY (OBJECTION NO. 1879) 87
MR E ARMSTRONG-BRAUN (OBJECTION NO. 1885) 88
MRS S CLAMP (OBJECTION NO. 325) 89
MR J BUTLER (OBJECTION NO. 310) 92
MRS S BUNNELL (OBJECTION NO. 775) 93
MR & MRS A ELLIS (OBJECTION NO. 968) 94
MR T SLEEMAN (OBJECTION NO. 1878) 94
MRS D BUTLER (OBJECTION NO. 1882) 95
MR B PERRETT (OBJECTION NO. 1884) 96
MR I FROST (OBJECTION NO. 560) 96
MRS M FROST (OBJECTION NO. 584) 97
MRS C GILOGLY (OBJECTION NO. 40) 97
MR & MRS J HENDERSON (OBJECTION NO. 595) 98
WRITTEN OBJECTIONS 99
WRITTEN REPRESENTATIONS 100

7 THE CASE FOR THE COUNTER OBJECTORS 100

CONNAH'S QUAY TOWN COUNCIL 100
MR E ARMSTRONG-BRAUN 101
WRITTEN COUNTER-OBJECTIONS 101

8 REBUTTAL BY THE WELSH ASSEMBLY GOVERNMENT 102

MISS S SHENTON (OBJECTION NO. 108) 102
MR M ISHERWOOD AM (OBJECTION NO. 279) 104
MRS S MEWIES AM (OBJECTION NO. 193) 108
MR C SARGEANT AM (OBJECTION NO. 192) 109
CLLR C ELLIS (OBJECTION NO. 146) 112
CLLR H GAMBINO (OBJECTION NO. 310) 113
CLLR G HARDCASTLE (OBJECTION NO. 634) 114
CLLR P HEESOM (OBJECTION NO. 312) 115
CLLR M WARBURTON (OBJECTION NO. 1883) 115
CLLR E JONES (OBJECTION NO. 601) 117
MISS N FROST (OBJECTION NO. 640) 118
MR N HOWELL (OBJECTION NO. 43) 120
THE EWLOE GREEN A55 ACTION GROUP (OBJECTION NO. 7) 121
MR J GRAY (OBJECTION NO. 313) 121

MR C MARTIN (OBJECTION NO. 46) 122
MR D NORRIS (OBJECTION NO. 326) 123
MR P DAVIES (OBJECTION NO. 309) 126
MR D MAWDSLEY (OBJECTION NO. 590) 127
MR M FARROW (OBJECTION NO. 465) 128
MRS J HOUGH (OBJECTION NO. 1613) 130
MRS J WILLIAMS (OBJECTION NO. 1122) 132
MR P BUCHANAN (OBJECTION NO. 570) 132
MR D MACKIE (OBJECTION NO. 1881) & MR B MILLER (OBJECTION NO. 614) 133
MR J MALONEY (OBJECTION NO. 1879) 135
MR E ARMSTRONG-BRAUN (OBJECTION NO. 1885) 137
MRS S CLAMP (OBJECTION NO. 325) 139
MR J BUTLER (OBJECTION NO. 310) 140
MRS S BUNNELL (OBJECTION NO. 775) 141
MR & MRS A ELLIS (OBJECTION NO. 968) 142
MR T SLEEMAN (OBJECTION NO. 1878) 143
MRS D BUTLER (OBJECTION NO. 1882) 144
MR B PERRETT (OBJECTION NO. 1884) 145
MR I FROST (OBJECTION NO. 560) 147
MRS M FROST (OBJECTION NO. 584) 148
MRS C GILOGLY (OBJECTION NO. 40) 149
MR & MRS J HENDERSON (OBJECTION NO. 595) 150

9 CONCLUSIONS **152**

LEGAL AND PROCEDURAL MATTERS 153
CONSULTATION PROCESS 154
ADEQUACY OF THE TRAFFIC STUDY 155
HEALTH IMPACT ASSESSMENT 156
ENVIRONMENTAL STATEMENT 157
Air quality *157*
Ecology and Nature Conservation *159*
Landscape and Visual Impact *159*
Land Use *160*
Noise and vibration *161*
Pedestrians, cyclists and community effects *162*
Other environmental matters *163*
THE SCHEME IN RELATION TO PLANNING POLICIES 164
National Policy *164*
Regional and Local Planning Policies *167*
TRAFFIC AND ECONOMIC ANALYSIS OF THE SCHEME 168
Likely Traffic Impacts of the scheme *169*
Climbing Lane *171*
Hard shoulders *171*
OVERALL CONSIDERATION OF THE SCHEME 172
SIDE ROADS ORDER 174
THE COMPULSORY PURCHASE ORDER 176
MODIFICATIONS TO THE CPO 176
CONNECTING ROAD AND SLIP ROAD ORDER 177
ALTERNATIVE ROUTES 177
OTHER MATTERS 178
SUMMARY 179

10 RECOMMENDATIONS **179**

APPEARANCES 180
DOCUMENTS 184
GLOSSARY 195

CASE DETAILS

- The Connecting Road and Slip Road Order would be made under sections 10, 12 and 106 of the Highways Act 1980 and is known as:

  THE DOLGELLAU TO SOUTH OF BIRKENHEAD TRUNK ROAD (A494) (DROME CORNER TO EWLOE IMPROVEMENT) CONNECTING ROAD AND SLIP ROAD ORDER 200_

- The Side Roads Order would be made under sections 12, 14, 125 and 268 of the Highways Act 1980 and is known as:

  THE DOLGELLAU TO SOUTH OF BIRKENHEAD TRUNK ROAD (A494) (DROME CORNER TO EWLOE IMPROVEMENT SIDE ROADS) ORDER 200_

- The Compulsory Purchase Order would be made under sections 239, 240 and 246 of the Highways Act 1980 as extended and supplemented by section 250 of that Act and under section 2 of, and paragraph 1(1)(b), (3) and (4) of Part 1 of Schedule 2 to the Acquisition of Land Act 1981 and is known as:

  THE NATIONAL ASSEMBLY FOR WALES (THE DOLGELLAU TO SOUTH OF BIRKENHEAD TRUNK ROAD (A494) DROME CORNER TO EWLOE IMPROVEMENT) COMPULSORY PURCHASE ORDER 200_

- The draft Connecting Road and Slip Road Order and the draft Side Roads Order were published on 29 December 2006. The draft Compulsory Purchase Order was published on 5 January 2007.
- There were 2,305 objections outstanding to the Orders at the start of the local inquiry.
- The Orders would authorise: -

  (a) the construction of a new connecting trunk road and slip road between Ewloe Interchange and west of St David's Park Interchange, and the widening and improving of a bridge over a navigable watercourse in between Queensferry and Garden City;

  (b) the stopping up of highways or areas of highways, construction and improvement of highways, the stopping up of private means of access and the provision of new means of access to premises between Drome Corner and Ewloe;

  (c) the improvement of the Dolgellau to South of Birkenhead Trunk Road between Drome Corner and Ewloe;

(d) the execution of works on watercourses in connection with the improvement of the trunk road and the construction and improvement of other highways and the execution of other works mentioned above;

(e) use by the National Assembly for Wales in connection with such improvement of highways and the execution of other works; and

(f) the mitigation of adverse effects of highways or proposed highways on their surroundings.

Summary of Recommendation: I recommend that the Orders be not made.

1 PREAMBLE

1.1 I have been appointed by the Minister for the Economy and Transport, one of the Welsh Ministers, to hold an inquiry into the above draft Orders in accordance with the Highways Act 1980 and to report to the Minister for the Economy and Transport, one of the Welsh Ministers.

1.2 I held a pre-inquiry meeting on 10 July 2007 at the Holiday Inn (Chester West), Northop Hall, Chester at which the procedure for the Inquiry and the timetable for the submission of documents were explained. A note of the meeting can be seen at document INQ/1. At the pre-inquiry meeting, I sought clarification on the matter of alternative routes. The promoters stated that none of the objectors had submitted any plans of alternative routes; however the objectors felt that they had submitted proposals for a number of alternative routes in their objection letters. I therefore requested the promoters to resolve this with the objectors in time for any alternatives to be drawn to the attention of those who might be affected so that I could be aware of their concerns in considering the merits or otherwise of the alternative proposals.

1.3 This resulted in the publication of alternative proposals as outlined in document INQ/2. Five routes in total were identified; four of these, routes A1, A2, B and C, were located between the A548 at Kelsterton (between Connah's Quay and Flint) and Northop on the A55. These are shown on document INQ/4. A fifth route, E, between the A548 at Chester and the A55 near Broughton was also identified. This is shown on document INQ/5. Routes A1, A2, B and C were notified to those living within 100 metres and consultation bodies on 3 August 2007, and in respect of route E on 24 August 2007.

1.4 I held the inquiry at the same venue on 11 to 14 September inclusive, 18 to 21 September inclusive, 25 to 28 September 2007 inclusive and 2 to 5 October 2007 inclusive. I made unaccompanied site inspections on 10 September 2007 and during the inquiry, and formal accompanied site inspections on 10 and 11 October 2007.

1.5 There were 2,305 objections to the Orders at the start of the inquiry, including 322 signatories to two petitions, and including 22 statutory objections. In addition there were 9 letters of support, 12 letters of representation and 3 letters with miscellaneous comments. Two of the statutory objections were withdrawn during the course of the inquiry and one further statutory objection was received during the inquiry.

1.6 There were some 41 letters objecting to alternative route A1, and some 11 letters of support; some 40 letters objecting to alternative route A2, and some 7 letters of support; some 41 letters objecting to alternative route B, and some 8 letters of support; some 40 letters objecting to alternative route C, and some 7 letters of support; and some 111 letters objecting to alternative route E, and 2 letters of support.

1.7 Thirty-eight objectors, including 2 statutory objectors, appeared or were represented at the inquiry, as did two of the counter-objectors.

1.8 The effect of the Orders would be to provide for the widening and re-alignment of some 4.25 kilometres of the A494 trunk road from Drome Corner to Ewloe in the County of Flintshire, the provision of a new connecting trunk road and slip road between Ewloe Interchange and west of St David's Park Interchange, together with the widening and improving of a bridge over a navigable watercourse in between Queensferry and Garden City. The road would be widened to 3 lanes in both directions with the addition of a fourth, climbing, lane in the southbound direction. Existing junctions with Old Aston Hill, Plough Lane and Clay Lane would be closed and a new distributor road constructed alongside the widened A494 between the St David’s Park Interchange at Ewloe and Plough Lane. This would provide alternative 2-way access for traffic currently using these junctions. In addition, the northbound exit slip road from the A494 to the St David’s Park Interchange would be closed and a new connector road provided giving access to the St David’s Park Interchange for traffic from the A55. From the Queensferry Interchange to the northern end of the scheme the road would be widened to 4 lanes in each direction.

1.9 The main grounds of objection were on the likely impact that the proposals would have in terms of air quality, noise and the likely effect on local traffic, as well as the likely impact on individual properties.

1.10 At the inquiry, the promoter confirmed that all statutory formalities had been complied with. The relevant details are at document INQ/2.

1.11 There was one legal and procedural submission and two requests for adjournments. I deal with these in section 3.

1.12 This report contains a brief description of the site of the scheme (the subject of the Order) and its surroundings, the gist of the cases presented and my conclusions and recommendations. Lists of inquiry appearances, documents, plans and photographs are attached. I have included in the list

of documents the proofs and other statements of evidence submitted by the parties, subject, however, to the proviso that these may have been added to or otherwise amended at the inquiry, either during examination-in-chief or cross-examination.

2 DESCRIPTION OF THE SITE AND ITS SURROUNDINGS

2.1 The location of the scheme can be conveniently seen on page 2 of the Stage 3 Scheme Assessment Report (document DD10). The trunk road runs approximately from south-west to north-east through the site of the proposal, however in describing the site and the scheme in my report I shall use the convention adopted by the promoters and objectors when referring to the carriageways whereby the north-east direction is annotated "northbound" and vice versa.

2.2 The section of A494 which is the subject of these draft Orders connects to the A55 at Ewloe to the west of Chester. The A55 forms a southern bypass of Chester from the M53 motorway and from its junction with the A494 it continues along the north coast of Wales towards Anglesey. Immediately to the west of the A55/A494 junction, there is a limited access grade-separated junction where the A494 route continues towards Mold and on to Dolgellau.

2.3 The A55/A494 Ewloe Interchange is a two-level free-flow style junction; from this point the A494 runs north-eastwards to Queensferry before crossing the River Dee and joining the improved A550 near to Drome Corner. A grade-separated junction connects the route to the A548 to the north of Drome Corner; this latter road runs alongside the Dee estuary across the Flintshire Bridge towards Flint and Prestatyn. To the north of this junction the route divides at a signal controlled junction with the A550 continuing towards Birkenhead and the A5117 continuing to join the M56.

2.4 Immediately to the north-east of the A55, the A494 has a grade-separated roundabout junction, the St David's Park Interchange, giving access to the local road network; the road runs downhill through Ewloe before crossing over the Wrexham to Bidston railway line. There is then a limited at-grade junction with Old Aston Hill at which left turns in and out on to the northbound carriageway only are possible. A subway provides pedestrian access underneath the A494. The route then continues through the village of Aston where a grade-separated junction at Plough Lane gives access to the local road network and provides access across the A494.

2.5 The road then continues alongside the town of Shotton from which it is separated by the local road, Aston Hill, towards Queensferry where a grade-separated roundabout interchange provides access to the local road network and where there are local commercial premises, including a supermarket. Footbridges provide pedestrian access through the interchange which avoids the need to cross some roads at-grade. There is also a footbridge, known as the Chevrons Road footbridge, across the A494

to the south of the interchange. An at-grade junction with a local road, Clay Hill Lane, provides a left turn in and left turn out facility only onto the southbound carriageway. The road then continues under the Chester to Holyhead railway before crossing the river Dee to link with the improved route at Drome Corner. This improved section is of largely dual 3-lane standard with hard shoulders.

2.6 The section of A494 which is the subject of these Orders is mostly of dual 2-lane standard, however there are additional lanes between the A55 Ewloe Interchange and the St David's Park Interchange, making this short section 3-lane; there are no gaps in the central reserve. For most of its length, this part of the A494 is subject to a 50 mph speed limit and is lit.

3 LEGAL/PROCEDURAL SUBMISSIONS

3.1 Mr E Armstrong-Braun made a legal and procedural submission that I could not legally consider the alternative routes put forward by objectors. This is set out in document COBJ/14/1. The gist of the submission is that I could not consider these routes because the objectors had not carried out a Strategic Environmental Assessment (SEA) under the European Union (EU) SEA Directives nor had they carried out a public consultation on the routes. In addition, no screening opinion had been carried out by the objectors under the EU Environmental Impact Assessment Directives to determine if an Environmental Impact Assessment is required on the alternatives. The alternative routes would affect EU protected habitat/species and Derogation Procedures under the EU HD Article 16 must be carried out by the Inspector. An Ecological Survey has to be carried out by the proposer of the routes; this has not been produced.

3.2 Mr Armstrong-Braun sought the abandonment or adjournment of the inquiry until these had been undertaken.

3.3 I explained that, in my view, these alternatives were not being promoted by a body with a statutory function in this respect. If I were minded to consider that the alternatives being put forward had some merit and should be investigated further, and the Minister concurred, a further process involving statutory processes including the procedures outlined by Mr Armstrong-Braun would have to take place before any of these alternatives could be proceeded with. I further stated that consideration of the alternatives was a material consideration for me to take into account in my assessment of the Orders before me. I therefore decided that there was no case for me adjourning or abandoning the inquiry on these grounds.

3.4 On day 1 of the inquiry, a number of objectors who were due to appear stated that they had not received copies of the proofs of evidence, contrary to the process agreed at the pre-inquiry meeting. The promoters confirmed that copies had been posted to all objectors who had indicated their intention to appear by the due date; further copies were made available on the day. However, in view of the concerns of the objectors I adjourned the

inquiry until the following day to give opportunity for those objectors to inspect the proofs before they were presented. I further asked the programme officer to review the dates on which the affected objectors were due to appear to enable them to have adequate time to prepare their cross examination. The procedure I adopted for the inquiry was to give objectors an opportunity to cross examine the promoters' witnesses at the time the objectors presented their cases.

3.5 On day 3 of the inquiry, a request was made for me to adjourn the inquiry to allow consideration of an announcement made by the Welsh Assembly Government on the preferred route for the section of road adjoining that under consideration at this inquiry. I explained that it was my view that this was not relevant to that day's business and that there would be time for objectors to consider this outside of inquiry time. I did not therefore consider that an adjournment was necessary. Further representations were made that the announcement would prejudice the outcome of this inquiry. I deal with this in my conclusions.

4 THE CASE FOR THE WELSH ASSEMBLY GOVERNMENT

The material points are:

Background

4.1 The A494 from Dolgellau to Birkenhead was designated as a trunk road in the Trunk Roads Act 1936 and is an important Strategic route particularly at its northern end through Flintshire, where it provides the link between Mid and North Wales and the motorway network in England. It forms part of Trans European Network (TEN) E22 - Dublin to Sasnitz in Poland. It is also a very important local road carrying traffic to and from the many major commercial, industrial and residential centres in the locality. Besides catering for long distance movements, it also carries a very high percentage of local sub-regional traffic.

4.2 The major part of the existing road from Queensferry to the St David's Park Interchange was constructed in the 1960's, with a short section to the south of the St David's Park Interchange being constructed in 1984. A number of smaller scale improvements have been carried out to increase capacity and reduce accidents. The Plough Lane junction was grade separated in 1978 and the Queensferry roundabout in 1979. More recently there has been a programme to close central reservation gaps and restrict direct access.

4.3 Increasing traffic volumes and the resultant increases in congestion and accidents during the late 1980's led the then Welsh Office to appoint consulting engineers in 1989 to undertake the North East Clwyd Traffic Study (NECTS).

4.4 The aims of the study were to:

a) Develop a traffic model for North East Clwyd capable of predicting annual and summer peak flows on the main road network and;

b) To identify potential traffic problem areas and the years in which the problems are expected to arise.

4.5 The study concluded that the section of A494 between Deeside Park and Queensferry was already operating above its capacity and should be widened to dual 3 lanes in the short term. It also concluded that continuing traffic growth would extend the overloaded section from Queensferry up to the Ewloe Interchange by 2001 and that improvements to Ewloe Interchange and the A55 up to Northop would be required by 2015.

4.6 As a result of the NECTS the Secretary of State for Wales announced a series of improvement schemes along the A494/A550/A55 corridor in May 1991. One of these schemes was for the improvement of the A494 between Drome Corner and Ewloe Roundabout Junction (also referred to as St David's Park Interchange). The schemes further north in Wales have already been completed, Deeside Park Interchange opened in 1997 and the improvement between Deeside Park and Drome Corner was completed in 2004. A complementary scheme in England to provide a free flow route through to the M56 is currently under construction and expected to be completed in late 2008. Further schemes to improve Ewloe Interchange and the routes to Northop and Mold are currently being developed.

4.7 A public consultation was carried out in 1992 into proposals to improve the A494 between Drome Corner and St David's Park Interchange. Two options were considered, an on-line option (Blue Route) and an off-line alternative route through open countryside between Mancot and the Aston Mead area (Orange Route). Document DD33 is a copy of the decision letter announcing the choice of the Blue route as the preferred option. A copy of the 1992 Consultation document is at document DD55 and a copy of the report on the outcome of the consultation is at document DD58. The Blue route was worked up in more detail and a variety of environmental and ecological surveys carried out between 1992 and 1996. Preparation work was then suspended pending a review of the Trunk Roads Programme.

4.8 The review of the Trunk Road Forward programme of improvements included a consultation exercise carried out in 1997. The review resulted in the publication of *Driving Wales Forward – A Strategic Review of the Welsh Trunk Roads Programme* (DD27) in July 1998. In respect of the schemes on the A55/A550/A494 in North Wales it concluded that:

> "We have no doubt that action is required to resolve the road safety, traffic congestion and environmental pollution problems which already exist and which are likely to deteriorate in the Queensferry area. We inherited a number of schemes designed to address these

problems"

and then went on to state that:

> "We do not consider that it would be appropriate to take decisions on these schemes until a comprehensive area transportation study has been carried out to assess the contribution which enhanced public transport can make to alleviate the problems identified".

4.9 As a result of this, consultants were appointed to carry out the Queensferry Transportation Study in November 1998. The study focused primarily on transport in the Deeside, Queensferry, Mold, Flint and Chester areas, but also considered longer distance traffic travelling to the motorway network and the conurbations of Greater Manchester and Merseyside, and other parts of North Wales including the sea ports. The consultants were required to assess the impact that improved public transport services and the installation of telematics and other 'Making Better Use' strategies could make to alleviating the problems and in particular to reducing traffic volumes at peak times.

4.10 The Queensferry Transportation Study Report (document DD16) was published in 2001 and concluded that improved public transport systems could only make a small impact on the traffic problems in the area and they would also require a significant operating subsidy. The main reason being that there were far too many different origins and destinations for the traffic on the A494 corridor. A summary report (document DD16A) and leaflet (document DD16B) were also produced and circulated to interested parties and local councils.

4.11 *The Trunk Road Forward Programme 2002* (TRFP) (document DD18) was published in March 2002. This, and the 2004 supplement to that document (document DD19), confirmed the A494 Drome Corner to Ewloe Improvement within Phase 1 of the Programme, with a programmed start by March 2007. Paragraphs 4.4.2, to 4.4.5 of the 2002 document concluded that the widening of the A494 should be proceeded with.

4.12 The Minister for Economic Development and Transport confirmed in his Statement on the Transport Review in December 2004 (document DD21) that the contract for a scheme to enhance the capacity of the A494/A550/A55 from Drome Corner to Ewloe would be awarded in early 2005. An Early Contractor Involvement contract was awarded in June 2005 and the scheme is included in the agreed budget of the Welsh Assembly for the years 2007/08, 2008/09 and 2009/10.

4.13 A number of refinements were made to the scheme and a further public consultation exercise was carried out with an exhibition being held in the Deeside Leisure Centre from 19 to 21 July 2006. As a result of this exhibition and other meetings with groups and individuals at the time, a number of changes were made to the scheme to alleviate as many of the

concerns raised as possible. These included: -

- The addition of the Aston Distributor Road to avoid the need for traffic to use Old Aston Hill;
- The deletion of a proposed new link from Mountfield Road across to Lower Aston Hall Lane;
- The deletion of a proposed footpath beneath the A494 on the northern side of the Wrexham-Bidston Railway;
- The reinstatement of a cul-de-sac adjacent to the Plough Inn – it had been proposed to delete this cul-de-sac and extend the properties' driveways to meet the Aston Distributor Road;
- The addition of the A55 Connector road to avoid the need for traffic to divert through Hawarden as a result of not being able to accommodate a replacement Northbound Exit slip road to the St David's Park Interchange until the next phase of the planned improvements were completed;
- The relocation of the footway between Lower Aston Hall lane and the Wrexham-Bidston railway to run adjacent to the trunk road;
- An increase in the amount of mounding and screening between Lower Aston Hall Lane and the Wrexham-Bidston Railway; and
- Closing and gating of Chester Road East.

4.14 These changes were incorporated into the draft orders for the scheme and shown at the draft Orders Exhibition held in the Deeside Leisure Centre from the 11 to the 13 January 2007.

The need for the scheme

4.15 The A494 between the River Dee and the St David's Park Interchange consists of a dual 2-lane all purpose trunk road with many features that fall well below today's design standards. The horizontal and vertical alignments are very poor in places for a road of this type and the lack of hard strips and verges in some places means that there is nowhere for broken down vehicles to pull off clear of the road. There is a footway on one or both sides in places but not throughout.

4.16 Traffic volumes have grown on this route from about 15,000 vehicles per day (vpd) when it opened in the 1960's to 61,800 vpd in 2005.

4.17 Safety is relatively good on the main alignment, which has an accident rate close to that for older style dual 2-lane roads in the UK. The majority of the accidents on this corridor occur at the junctions which are also well below standard for a road of this type. The slip roads are generally too short and

too close together and some of them have inadequate forward visibility.

4.18 Capital construction is estimated at £57.584m (at December 2006 prices) and the gross cost, with statutory undertaker diversions, land acquisition/compensation and preparation/supervision included is estimated at some £71m at current prices.

Policy

National Policy

4.19 The National Assembly for Wales was established in September 1997 and received its devolved powers under the Government of Wales Act 1998 on 1 July 1999. The Assembly delegated its executive powers to the nine cabinet Ministers who form the Welsh Assembly Government. The Government of Wales Act 2006, which came into force in June 2007, conveys additional legislative powers to the Assembly.

4.20 The Welsh Assembly Government has published a number of policy documents, including: -

- *www.betterwales.com 2000* (document DD24) - the first strategic plan for Wales;
- *Wales: A Better Country 2003* (document DD29) - the first strategic agenda of the 2003-07 Assembly;
- *Making the Connections: Delivering Better Services for Wales* (document DD26); and
- *The Wales Spatial Plan* (2004) (document DD20).

4.21 These policy documents describe a strategy to improve transport links to support a stronger economy in Wales and improve road safety and community environments. Three basic principles underpin the Assembly Government's strategic aims: -

a) Sustainable development; aiming to promote development that meets the needs of the present without compromising the ability of future generations to meet their own needs;

b) Tackling social disadvantage; aiming for the development of a safer, more inclusive society where everyone has the chance to fulfil their potential;

c) Promoting equal opportunities; to promote a culture in which diversity is valued and equality of opportunity is a reality.

4.22 These principles are consistent with three of the action areas outlined in the Assembly Government's first strategic plan *www.betterwales.com* and relevant to transport, namely to promote for the people of Wales: -

a) A better quality of life;

b) A better, stronger economy; and

c) A better health and well being.

4.23 The overall transport target set in *www.betterwales.com* (document DD24) is to develop a better co-ordinated and sustainable transport system to support local communities and the creation of a prosperous economy. The Assembly expects those who deliver transport infrastructure and services to do so within the context and principles in this framework.

4.24 The Assembly Government aims to promote a strong, modern and knowledge based economy, a cleaner environment, thriving communities in both urban and rural areas and a society of opportunity and inclusiveness. Achieving this aim in a sustainable manner will place new demands on the transport system in Wales. Years of decline in public transport has to be addressed. Dependence upon the car has to be reduced, at the same time improving accessibility and mobility for everybody, particularly for those without access to a car. The Assembly Government needs to establish the basis for everyone to make informed decisions, whether they are investing in transport or making a journey.

4.25 The Assembly Government's strategic agenda is set out in *Wales: A Better Country* (document DD29) published in 2003. Its vision is for a sustainable future for Wales, where actions for social, economic and environmental improvement work together to create positive change. This vision is also echoed in the Assembly's principles set out in the Sustainable Development Scheme and also through the UK's *Shared Framework for Sustainable Development to 2020, One Future - Different Paths (2005)*, which places particular emphasis on improving the lives of people in deprived communities.

4.26 *Making the Connections: Delivering Better Services for Wales* (document DD26) published in October 2004, focuses on improving public services, making them more responsive, efficient and accessible to people. The aim is for organisations to work more closely together to provide the best services and for communities to be more actively involved in making the decisions that shape their future. *Making the Connections* lies at the heart of the transport strategy.

4.27 In 2004 the Assembly Government published *The Wales Spatial Plan* (document DD20), which was adopted by the National Assembly for Wales in November 2004. It provides the framework to implement *Wales: A Better Country* (document DD29) and the commitment to sustainable

development. The transport strategy needs to support the outcomes and vision being sought in the Spatial Plan, which is structured around five themes: -

a) Building sustainable communities;

b) Promoting sustainable economies;

c) Valuing the environment;

d) Achieving sustainable accessibility; and

e) Respecting distinctiveness.

4.28 The Welsh Assembly Government published *The Transport Framework for Wales* in November 2001 (document DD17). The Framework, which was prepared and published on a non-statutory basis, set a target to facilitate within 10 years a transport system that: -

a) Delivers agreed thresholds of accessibility and information for users;

b) Provides strategic mobility within environmental and health benchmarks for regeneration and other economic aims;

c) Changes travel patterns and transport usage and, where appropriate, reduces the need to travel by motor vehicles by integrating with land use planning;

d) is consistent with the real needs of people living in different parts of Wales and with differing abilities to afford travel;

e) Charges the traveller a fair reflection of the costs of making a journey, financial, social and environmental;

f) is adaptable to the developing needs of Wales.

4.29 The Transport Framework identifies a Vision and a Strategy, which help define decision criteria. These criteria are tests against which the value of transport projects can be measured, allowing the development of integrated programmes whatever the source of funding.

4.30 If the Assembly Government is to support local communities and achieve a prosperous economy, it will be important to sustain and enable economic development, including better access for people and communities to economic opportunities within Wales and in the wider world. The Assembly Government aims to achieve this by the following measures: -

a) Improving public and community transport in all areas to improve accessibility for those who do not have a car; in urban areas there is

an added aim to attract people away from travelling by car;

b) Maintaining and enhancing strategic transport corridors within Wales to provide high quality access and mobility; for internal movement and journeys and those wanting to gain access to the rest of the UK, Europe and beyond for economic, social or other reasons;

c) Facilitating the sustainable development of the full strategic potential of major ports and Cardiff International Airport;

d) Maintaining and improving regional and local roads to preserve assets, and to provide better access and mobility for road-based public transport, freight and private travel;

e) Contributing to the UK Government's target to increase by 80% the amount of freight moved by rail and to improve the efficiency and quality of the way freight is moved by road;

f) Improving safety, health and environmental conditions particularly on roads;

g) Increasing the amount of walking and cycling for necessary journeys, whether for the whole of short journeys or as part of a longer journey involving other means of transport.

4.31 The Transport Framework identifies five challenges to the Assembly's aims for transport. These are: -

4.32 Firstly, to get people to switch to public transport and other, more sustainable, forms of transport, from their cars and thus to sustain improvements to public transport infrastructure and services. In doing this, the Assembly Government need to acknowledge the differences between rural and urban areas. If the Assembly cannot sustain the improvements to public or community transport it will not achieve the social aim to meet the needs of those who do not have a car or realise the environmental benefits. The Assembly needs to consider carefully whether, how and where it can practically reduce road traffic.

4.33 Secondly, to prioritise the development of Assembly programmes for maintaining and developing transport networks, whether it be by rail or road. The Assembly needs to ensure that the infrastructure is capable of providing an adequate level of service for journeys within Wales as well as providing links to destinations beyond. The networks need significant investment for maintenance and improvement, which must be well targeted and carried out in a sustainable manner.

4.34 Thirdly, to address freight issues in Wales. In the past, governments have tended to concentrate on attempting to transfer more freight to rail, which is just one important objective. At the same time as supporting the UK Government’s targets in this, the Assembly also needs to concentrate on the quality and efficiency aspects of moving freight by road.

4.35 Fourthly, there are challenging targets for improving safety by 2010. The Road Safety Strategy and programmes will need to address the priorities with the limited resources available in order to meet them. The rail industry also needs to maintain its initiatives in improving safety for rail travellers.

4.36 Fifthly, to make the safety, comfort and convenience of people making journeys by walking and cycling sufficient to attract a greater number to achieve healthier lifestyles and help improve environmental conditions.

4.37 The Assembly's emphasis on improving life in communities will mean an emphasis in transport providing a safer and better environment by: -

a) Listening to the needs and wishes of local communities and local groups;

b) Reducing isolation and providing opportunities for rural diversification;

c) Reducing speeds and setting appropriate speed limits and restricting motor vehicles access to residential streets, where appropriate;

d) Contributing to well-designed and maintained environments;

e) Reducing congestion;

f) Facilitating walking and cycling locally by improving facilities and off-road routes;

g) Reducing traffic noise;

h) Improving air quality;

i) Reducing accidents.

4.38 Whilst there was strong support from stakeholders for the Transport Framework, it was also evident that the Assembly Government's implementation powers were limited, particularly in relation to transport planning and public transport. This meant that the Assembly Government was restricted in taking forward the Framework. In the light of this, the Assembly Government sought a range of new transport powers, which became available through the *Railways Act 2005* and the *Transport (Wales) Act 2006*, providing a coherent set of transport powers for the first time.

4.39 Under the *Transport (Wales) Act 2006*, the Welsh Assembly Government has a statutory requirement to prepare and publish a *Wales Transport Strategy*. The Assembly Government, working with local authorities in Wales, has developed a draft strategy *Wales Transport Strategy - Connecting Wales.* This draft Strategy, which was issued as a consultative document in July 2006, recognises that transport systems are central to all aspects of sustainable development: to a thriving economy; to giving

people in deprived communities better access to jobs and services; and to developing alternatives to private car use and reducing greenhouse gas emissions.

4.40 Following a comprehensive public consultation, the Assembly Government is working to publish the final version of the *Wales Transport Strategy* (WTS). The Strategy will be implemented through a series of Assembly Transport Plans, which will set out the policies and programmes of schemes of national importance, as well as four Regional Transport Plans prepared by the local authority transport consortia. These will provide a regional framework for transport provision, taking account of the Assembly Transport Plans. As part of the process for implementing the WTS, a Trunk Roads Plan (TRP) will be developed, setting out objectives and outcomes in relation to the trunk road network in Wales. From the TRP a series of Route Management Strategies (RMS) will be developed, providing detailed objectives and outcomes for each trunk road route in Wales, including the A494. In addition there will be an updated Trunk Road Forward Programme (TRFP), setting out proposals for major interventions on the network, which will reflect the objectives and outcomes of the TRP and RMS.

4.41 The Strategy will focus on the role that transport can play in delivering the Assembly's wider policy objectives in areas such as spatial planning, economic development, education, health, social services, the environment and tourism. The Assembly has worked closely with the Welsh Local Government Association (WLGA), Regional Transport Consortia and a range of other key stakeholders during the development of this strategy. This is in order to reflect the specific circumstances that apply in different parts of Wales.

4.42 When finally published this Strategy will replace the current transport policy document *The Transport Framework for Wales* (document DD17).

4.43 The overall scheme objective is to enhance the capacity of the A494 between Drome Corner and Ewloe, to improve the economic performance and safe operation of the route; to improve the local environment and accessibility, all in a manner which respects and enhances the wider environment. Specific project objectives set by the Assembly Government are:

- To deliver the project to time, with optimal value for money and within the Welsh Assembly's budget for the whole project including all preparation, land and compensation and construction costs;
- Widen the existing trunk road between Drome Corner and Queensferry to 4 lanes in each direction; and between Queensferry and Ewloe to 3 lanes each way plus a climbing lane on the southbound carriageway, all with hard shoulders;
- Design the scheme in accordance with DMRB Criteria;

- Remove the 50 mph speed limit imposed on much of this stretch of the A494;
- Improve road safety along the corridor by closing all intermediate junctions between the River Dee, Queensferry and Ewloe. Provide appropriate alternative access for local traffic via the local road network;
- Improve safety at Queensferry and Ewloe Green junctions (also known as St David's Park Interchange);
- Provide a scheme that is safe to operate and maintain;
- Provide a residual pavement life of 40 years for both new and improved existing carriageways;
- Where appropriate make provision for pedestrians, cyclists and equestrians where they cross the trunk road, linking in with existing facilities;
- To deliver a scheme which protects and enhances the built and natural environment, is designed to reflect its location within the urban and semi rural setting and takes full account of national and international protected sites and species and all current environmental legislation.

Regional Policy

4.44 *Regional Planning Guidance* (RPG) is not a requirement in Wales; however the Welsh Assembly Government has encouraged the Welsh Local Authorities to work together to agree planning objectives and policies for their own regions. As a result, *Planning Policy Wales* (document DD90) does not provide defined regional planning policy guidance or a sub regional policy context for the preparation of Unitary Development Plans. Instead, the Welsh Assembly Government advised local planning authorities to collaborate in setting strategic planning objectives and policies for their areas, and to establish appropriate voluntary working arrangements to achieve this.

Local Policies

4.45 The proposed scheme lies within the administrative area of the County of Flintshire, which is the local planning authority (LPA). *The Flintshire Unitary Development Plan - Deposit Draft Plan September 2003* (UDP) (document DD59) has not yet been formally adopted, the current Development Plan comprises those plans which have been taken through all the formal stages including consultation, inquiry, modification and approval (where relevant), and adopted by Flintshire. These include the *Clwyd Structure Plan First Alteration* which expired in 1996 and the *Alyn and Deeside Local Plan* (document DD56) which expired in 2003.

4.46 So far no statutory document has superseded these plans, but several non-statutory plans, which reflect more up to date planning policy guidance, have been approved for development control purposes. These are the *Structure Plan Second Alteration: Flintshire Edition* (document DD57), the *Draft North Flintshire Local Plan* and the *Flintshire Unitary Development Plan - Deposit Draft Plan September 2003* (document DD59).

4.47 *The Planning and Compulsory Purchase Act (2004)* brought changes to the planning system in both England and Wales, including changes to the structure of Development Plans at the local level. It is intended that the Flintshire UDP will form the basis of the new Local Development Plan (LDP).

4.48 The scheme would comply with Conservation of the Environment Policies of the *Structure Plan Second Alteration: Flintshire Edition* (document DD57). The scheme generally would have a neutral impact apart from the loss of agricultural land; however there is an overriding need to take this land. The scheme would be beneficial in terms of reducing the risk of flooding and the impact of traffic noise, together with likely improvements in water quality. It would therefore comply with policies on Environmental Protection. The scheme would comply fully with all Transport policies of the County Council, albeit indirectly in the case of Public Transport by providing an off line route more suitable for buses. In particular the scheme is one of those listed as being one on which the Council would seek an early start.

4.49 The route of the scheme is safeguarded in the *Alyn and Deeside Local Plan* (policy T2). Policy T1 indicates that transport schemes requiring planning permission should provide new or improved access to employment areas or housing areas or commercial and other facilities; reduce the amount of noise, fumes, visual intrusion and other related environmental problems; reduce congestion and delays to road users. The scheme would reduce congestion and delays, and is designed to minimise air and noise pollution and visual intrusion as far as possible.

4.50 The scheme would be generally supportive of Transport and Communications policies in the emerging Flintshire Unitary Development Plan in that it would contribute towards a safe, efficient and reliable transport system. It would also make provision for improved walking and cycling routes and provides a side road route for improved bus facilities. It would however be unlikely to make any significant contribution towards reducing the number of journeys by car.

4.51 The scheme would utilise as much brownfield land as possible and would also recycle as much material on site as possible to minimise the amount of material that would have to be imported. The scheme would therefore comply with the policy on Resources.

4.52 The proposed scheme would be an improvement of an existing road along a corridor protected in the UDP. It has been designed to harmonise as much as possible with the surroundings so it would comply with these general

requirements.

4.53 The scheme would be generally supportive or neutral when compared against the rest of the policies in the UDP. The only negative factor would be the loss of agricultural land, which would be essential for the scheme and could not be avoided.

4.54 The Scheme would be compatible with Flintshire's Transport Plans, which support improvements to strategic routes.

The Scheme

Existing Road Layout

4.55 The existing road is dual two lane all-purpose (D2AP) standard without hard shoulders or hard strips. It climbs the steep (average 4%) gradient of Aston Hill between Queensferry and St David's Park.

4.56 The road is subject to a 50mph speed limit over much of its length and has a mixture of at-grade (surface level) and grade-separated junctions (flyover or underpass). The at-grade junctions are markedly below the current design standards required by the Design Manual for Roads and Bridges (DMRB) (document DD41).

4.57 The A494 crossing of the River Dee at Queensferry is the most westerly trunk road crossing of the River Dee. It provides the main link between North Wales and Merseyside and provides the most direct route from North Wales to the M56, Merseyside and the North of England.

4.58 The land surrounding this section of the A494 is principally urban to the north of the road and semi-rural to the south. The road passes through the urban conurbations of Queensferry, Pentre, Aston Mead and Aston/Higher Shotton. South of the Wrexham to Bidston railway the road passes through open fields and an old quarry area prior to passing between the residential developments of Carlines Park, Old Aston Hill and Ewloe Green.

4.59 Major interchanges are located at St David's Park and Queensferry. Located between these interchanges is Plough Lane junction, which is grade separated and provides for local access to Aston and Higher Shotton. Other left in/left out junctions within the road length are at Old Aston Hill (B5127), Clay Lane and the Sewage Works access.

4.60 Footways are provided on the west side of the A494 between St David's Park Interchange and Plough Lane junction, and then northwards from Queensferry Interchange over the Dee Bridge. To the south, they are provided from Lower Aston Hall Lane to the Wrexham to Bidston Rail Bridge. Elsewhere there are no footways adjacent to the carriageway.

4.61 There are a total of 8 bridges on this section of the A494. Plough Lane crosses over the A494 and local roads cross under at the St David's Park and Queensferry Interchanges. The road also crosses over the Wrexham to Bidston railway line and under the Chester to Holyhead railway line. The River Dee passes under the A494 to the north of Queensferry Interchange.

4.62 Near its southern end, a footbridge crosses the route between the Ewloe Interchange and St David's Park Interchange. A subway passes under the A494 just to the north of the Wrexham to Bidston Railway adjacent to Aston Mead. A second footbridge crosses the carriageway to the south of Queensferry Interchange, adjacent to Chevrons Road and a second subway passes under the A494 just to the north of Queensferry Interchange.

4.63 The A494 is lit along the central reserve.

4.64 The length of carriageway between Ewloe Interchange and Queensferry interchange was opened in 1964. No significant maintenance operations were carried out to the pavement until the Aston Hill reconstruction works took place in 1994.

4.65 Renewal or re-surfacing of the existing pavement will be required in the medium term in the do minimum situation. This is not currently within the Assembly's 5 year maintenance programme, but it is likely that works would be undertaken between 2012 and 2017, should the proposed improvement works not proceed.

Description of the scheme

4.66 The proposed scheme is shown in Appendix A of document DD35.

4.67 The proposed scheme would be an on-line improvement of the A494, between the River Dee and Ewloe Interchange. The proposed improvement would widen the existing 2 lane dual carriageway to a 3/4 lane dual carriageway with hard shoulders. The section of the scheme north of Queensferry Interchange is proposed as a 4 lane dual carriageway crossing the River Dee and joining the existing A494, which already has 4 lane carriageways with hard shoulders at the tie-in point.

4.68 South of Queensferry Interchange the proposals would provide a 3-lane dual carriageway together with hard shoulder. These hard shoulders would be provided from north of the River Dee Bridge to the St David's Park Interchange. Additionally, the southbound carriageway would have a climbing lane between the Queensferry and St David's Park Interchanges, making it 4 lanes wide plus hard shoulder.

4.69 Local roads currently join the trunk road by way of T-junctions. These are below the standard currently required by the Design Manual for Roads and Bridges (DMRB) (document DD41). These junctions would be closed,

resulting in the need for junction alterations and alternative routes for local traffic. The junctions are Old Aston Hill (northbound), Plough Lane, (northbound and southbound), Clay Hill Lane (southbound) and the existing access to the sewage works area beside the River Dee (southbound).

4.70 New local access roads would be provided at three locations as follows:

- A new link from the A55 Ewloe Interchange to the St David's Park Interchange (the A55 Connector Road).
- A new link from the St David's Park Interchange to Aston Road (the Aston Distributor Road (ADR)).
- A new road from the Chemistry Lane/Factory Road junction to the Environment Agency Pumping Station (the Chemistry Lane Link).

A494 Mainline carriageway

4.71 The improvement works to the main dual carriageway would start just beyond the A55 overbridge in the south and terminate at the tie in to the recently improved Deeside Park to Drome Corner scheme, just to the north of the River Dee.

4.72 The main A494 carriageway would be designed to a 120A kph design speed; the carriageway cross-sections would include hard shoulders and generally 2.5 metre verges, although in some locations these would be reduced to 2 metres to minimise land take.

Climbing Lane

4.73 TD9/93 of the DMRB (document DD41) sets down the minimum requirements for a climbing lane to be considered. On the Aston Hill, the gradient exceeds 3% for a distance of some 1,170 metres, with a peak gradient of 5.8% over a distance of some 140 metres. Standards require that a climbing lane should be considered where the gradient exceeds 3% for a minimum distance of 500 metres.

4.74 DMRB standards do not provide definitive requirements of where and when a climbing lane is required. They do, however, require that a climbing lane must be justified through an economic assessment of its benefits.

4.75 The capacity of a climbing lane is not taken into account when assessing the number of lanes. The Congestion Reference Flow (CRF) calculation does not include any parameters to reflect gradient.

4.76 Traffic slows on uphill gradients and as a result, the capacity of an uphill section of road is lower than the capacity of the flat sections of carriageway

either side. It is important to maintain consistency of carriageway over the entire link length to avoid vehicle conflict. If a climbing lane were not provided, bunching and possible congestion could occur at the lower reaches of the gradient.

4.77 The provision of a climbing lane would remove the potential restriction of HGVs overtaking and blocking lanes 1 and 2 at peak times with a consequential impact on free flow conditions.

4.78 The uphill section of Aston Hill has a slightly higher accident rate than national average. Many of these are due to slow moving vehicles in the nearside lane.

4.79 The scheme has been assessed using COBA and TUBA, which assess costs and benefits of a proposal. Both the COBA (part of DMRB, document DD41) and TUBA (document DD43) analyses indicate that there would be positive benefits in terms of accident reduction and journey time improvements from providing the climbing lane. The combined benefits are in order of £1.1m. Costs of £0.5m would be attributable to the climbing lane leaving net benefits of £0.6m. These would arise in respect of routine maintenance, as it would be possible to close a lane without having an impact on traffic flow. It is not possible to quantify any savings from accidents.

4.80 The inclusion of a climbing lane at this location would therefore comply with the requirements of the DMRB and would be justified.

4.81 The environmental effects of the provision of a climbing lane would be adverse. It would increase the amount of land required for the scheme and would bring the road closer to homes. These effects have been taken into account in the environmental assessment of the overall scheme as set out in the Environmental Statement (ES) (document DD05).

4.82 The affect on landtake as a result of the climbing lane is shown on drawing number 36057 - SK289 (attached to document WAG/16).

Hard shoulders

4.83 The Standards laid down in the DMRB for the cross section of a highway (TD27/05 of the DMRB (document DD41)) define specific widths required for each type of motorway or trunk road. The cross-section detail of the A494 has been prepared in full compliance with this standard. A Departure from Standard has been granted to incorporate hard shoulders.

4.84 An initial examination of the carriageway cross section would suggest that the removal of two 3.3 metres wide hard shoulders would reduce the width of the scheme footprint by some 6.6 metres. However, as a result of vehicle restraint systems positioned on the verges to protect the lighting columns, the overall reduction in land take would be significantly less. This is as a

result of the need to provide sufficient space for a broken down vehicle to pull safely onto the verge, out of the flow of traffic, with sufficient space to ensure the safety of the vehicle occupants. This requirement would comply with TD27/05. The safety of the travelling public must be comprehensively considered in the design of any road scheme.

4.85 Consequently, the removal of the hard shoulders would only offer a total width saving of some 1.76 metres. This reduction has to be considered and balanced against the loss of the safety benefits provided to both the travelling public and, when future maintenance occurs, the safety of the maintenance workforce and operational benefits, particularly during maintenance.

4.86 This section of the A494 is unusual in that it forms the primary route into North Wales for both local and long distance traffic. There is no other road in the vicinity that provides an alternative with sufficient capacity to accommodate the traffic flow on this link. It is imperative to maintain free flow conditions on the corridor at all times. Loss of this route would be extremely disruptive to both local traffic and to traffic wishing to access North Wales and Cheshire.

4.87 There are two primary reasons for the provision of hard shoulders on this scheme, namely safety of the travelling public and benefits associated with maintenance.

4.88 As the road is currently running close to capacity for much of the day, maintenance is carried out at night whenever possible to minimise disruption to traffic. Single lane closures result in extensive queuing even at night.

4.89 The provision of 3 lanes and hard shoulders in each direction would allow two lanes of flow in each direction to be retained during maintenance operations. Without hard shoulders, maintenance activities would be significantly restricted and limited to the maintenance of one lane at any one time, resulting in more costly traffic management and lengthier periods of disruption.

4.90 Maintenance cost benefits of some £17 million can be attributed to the hard shoulders over a 60 year period. Accident savings would be unchanged (document WAG 16).

4.91 The likely environmental impact from the provision of hard shoulders on the surrounding properties and land has been considered fully in the Environmental Statement. A scheme with no hard shoulders would not alter the need to demolish any of the properties within the draft Orders, nor would it alter the position of running traffic relative to properties and so would not have a different air quality or noise impact from the published proposals. It would allow a nominal reduction in the width of the proposed bridge over the Wrexham to Bidston railway and a reduction in surfaced

area.

4.92 These have been compared to the safety, operational and economic benefits that the hard shoulders provide. It has been concluded that, on balance, the benefits provided by hard shoulders would outweigh the disbenefits.

4.93 The overall width of the A494 corridor, not including the parallel side roads, would increase from some between some 31 metres and 42 metres, to between some 48.5 metres and 58 metres, and a percentage increase of between some 25% and 64% (document WAG/19).

Drainage and Lighting

4.94 Positive drainage of the carriageway would be by means of kerb and gulley and channel systems as appropriate. Runoff would be discharged to balancing ponds adjacent to the road for treatment and attenuation.

4.95 The A494 would be lit to current luminescence standards from both verges. High mast lighting would be removed. Signing would follow current guidelines providing directions to both local and strategic locations.

Link Roads

4.96 A new link road (A55 link) would be provided between the A55 northbound on slip road to the A494 and St David's Park Interchange via a new roundabout with the B5127 Old Mold Road. A second new link road (the Aston Distributor Road) would be provided between St David's Park Interchange and Aston Road/Plough Lane, adjacent to The Plough Inn Public House. A third new link road (Chemistry Lane Link) would be provided between the factory Road/Chemistry Lane junction and the Environmental Agency pumping station adjacent to the A494 and River Dee.

Accommodation Works

4.97 Accommodation works would be provided where necessary. Two police observation platforms, a lay-by for police and the Vehicle and Operator Services Agency (VOSA) use and a wide load lay-by would be provided in the proposals.

Structures

4.98 This section of the A494 crosses a relatively high number of structures of various forms.

4.99 From North to South these comprise: -

- River Dee;
- Chester/Holyhead Railway;
- Queensferry Subway;
- Queensferry Interchange viaduct;
- Chevrons Road Footbridge;
- Plough Lane;
- Aston Mead Subway;
- Wrexham to Bidston Railway;
- St David's Park Interchange; and
- Ewloe Footbridge.

4.100 Of these, Chevrons Road Footbridge and Aston Mead Subway would be closed. Alternative crossing points for pedestrians and cyclists would be provided at Aston Mead via a footpath beneath and parallel to the Wrexham to Bidston Railway structure, or via the Plough Lane overbridge.

4.101 Replacement crossings for Chevrons Road Footbridge would be via the Plough Lane overbridge or the Queensferry Interchange. All other crossings would remain although the layouts and locations would change.

4.102 The existing structures are generally in a sound condition with the exception of the River Dee Bridge, the Queensferry Interchange viaduct and the Wrexham to Bidston Railway.

4.103 The Wrexham to Bidston Railway will require significant strengthening works to rectify; The Queensferry viaduct has major short to medium term durability issues which can only be rectified through major maintenance works or complete demolition and rebuild, the existing parapets do not comply with current standards and the horizontal curvature of the deck is below standard; The River Dee bridge deck will require major maintenance to the existing structure in the short to medium term if the improvement works do not progress.

4.104 These necessary maintenance works would generate long term disruption of some 6 to 12 months in each instance, with road closures and long term lane closures required on the existing carriageway.

4.105 The scheme would involve the replacement of the existing River Dee bridge deck and a new bridge to be constructed alongside to accommodate the southbound carriageway. The River is navigable and headroom and span would be designed to cater for navigation needs. Provision would be made

for cyclists on the river bridge in the form of a segregated cycleway abutted to the western side of the northbound carriageway.

4.106 The current A494 passes beneath the Chester to Holyhead railway. The current structure would accommodate the proposed new northbound carriageway of the widened A494. A new structure beneath the railway would be required for the southbound carriageway. The method of construction would minimise disruption to the rail network, but would require overnight working during railway possessions.

4.107 The existing Queensferry Subway would be of insufficient length to accommodate the widened A494 carriageways plus slip roads and the existing internal width is too narrow for the current relatively high usage by pedestrians and cyclists. A new subway would be constructed a few metres to the north of the existing structure which would be wider than the existing and would accommodate both pedestrians and cyclists.

4.108 The Queensferry viaduct and the Wrexham to Bidston Railway Bridge would be demolished and replaced. The existing Plough Lane Overbridge would be extended to accommodate the widened A494. The southbound carriageway of the widened A494 would be accommodated on the existing structures at the St David's Park Interchange but new bridges would be required for the northbound carriageway.

4.109 A new steel truss footbridge with suitable disabled access via ramped approaches would be provided to replace the existing Ewloe footbridge. This would span both the main carriageway and the proposed A55 Connector road.

Construction Programme

4.110 The proposed Construction Programme has been based on a target commencement date of May 2008. The construction period is forecast to be 32 months followed by a five year landscape aftercare period. The programme has been developed to minimise disruption to the public. It would follow the logic of the traffic management requirements which are designed to prioritise the safety of the traveller and the workforce. In drawing up the current programme the following have been considered and would be further assessed and confirmed prior to construction: -

(a) Fish migration runs in the River Dee which limit working times in the River Dee;

(b) Restrictions on the timing of earthworks operations to take account of otter & water vole habitat ;

(c) Bird nesting seasons which would restrict site clearance operations;

(d) Relocation of badgers with constraints on timing;

(e) The need to phase the demolition of properties to allow phased re-housing of people has been considered. This impact has now been minimised as the majority of the affected people have already been re-housed, and

(f) The nature of certain operations, for example earthmoving, which would be best carried out in the drier seasons.

4.111 The programme for the scheme would be developed to minimise the need for night or other out of hours work. Generally, working hours would be within the envelope of 08.00 to 19.00 on Mondays to Fridays with the addition of 08.00 to 16.00 on Saturdays when required. Night time working would be required for specific short term operations. These would include the following:

(a) Work within railway possessions during the construction of the Chester to Holyhead rail bridge;

(b) Work within railway possessions during the construction of the Wrexham to Bidston rail bridge;

(c) Partial demolition of Plough Lane overbridge during a closure of the trunk road;

(d) Demolition of the Queensferry Viaduct whilst traffic operates in contra-flow on the roundabout;

(e) Erection of deck beams to the Queensferry Interchange and St David's Park Interchange underbridges whilst traffic operates in contra-flow on the roundabouts;

(f) Demolition of the existing and erection of the new Ewloe Footbridge during a closure of the trunk road; and

(g) Major changes to traffic management layouts which would be safest when carried out in low traffic flow conditions.

4.112 All instances of night work would be well publicised beforehand and close liaison would be maintained with those residents and members of the public closely affected by the work.

4.113 Four lanes of traffic would be generally maintained on the A494 during the construction period. Other than at the St David's Park Interchange, northbound off slip road, and those roads subject to permanent closure, all movements at interchanges would be maintained throughout the construction period.

4.114 There would be specific, short term operations which would require additional constraints on traffic. These operations, which would include trunk road closure during bridge demolition, roads closures during bridge

beam erection and single lane working during traffic management phases, would be minimised. When necessary they would be fully publicised beforehand and diversion routes would be properly planned and signed.

Traffic and Economic Assessment

4.115 The A550/A494/A55 traffic corridor has been the subject of a number of traffic surveys in recent years, and consequently there is considerable existing data that can be utilised for this assessment.

4.116 A comprehensive series of roadside interviews were carried out throughout the Flintshire and West Cheshire area for the North East Clwyd Traffic Study in 1990. These surveys were subsequently updated with further surveys and additional counts for the A494 Drome Corner to Ewloe Interchange Improvements Study in 1995. These surveys formed the basis for the Study carried out between 1995 and 1996 to provide the traffic and economic background for the assessment of the Drome Corner to Ewloe scheme at that date.

4.117 Detailed traffic counts, and weaving flows between the A494 (Mold Road), Ewloe Interchange and St David's Park Interchange were available from the Ewloe Interchange Study Survey Report (document DD87) carried out in 2003.

4.118 Journey time data from the A5117 Deeside Park Junctions Scheme in 2003 has been used to compare routes between the M56 and A55.

4.119 The Welsh Assembly Government operates permanent automatic traffic counters on the trunk road network across Wales. Counters at six locations on the A550/A494/A55 corridor provided data between Deeside Park and Northop and the A55 east of Ewloe Interchange. The Highways Agency provided additional automatic traffic count data for the trunk road network in England.

4.120 The demand for local movements between the Queensferry, Plough Lane and St David's Park junctions was determined from vehicle tracking surveys, using registration plate data.

4.121 A roadside interview survey was carried out on the 1st May 2007 on the A494 between Alltami and the A55, which is less busy and interview surveys were possible. The survey was carried out in accordance with DMRB procedures.

4.122 Manual traffic counts were undertaken at a number of locations. Traffic counts were undertaken for a twelve hour period between 07:00 and 19:00 on a normal weekday, avoiding school and bank holidays.

4.123 Journey time data was collected on the A494 between Ewloe Interchange

and the River Dee. Surveys were conducted during the morning and evening peak periods and during the inter peak period.

4.124 Journey time data was collected in accordance with the DMRB Volume 12a – Section 2 Chapter 3, Journey Time Measurements (document DD41).

Accident data

4.125 Flintshire County Council provided information on traffic accidents for the last five complete years available (2002 to 2006) on the A494 and at the main junctions. Records are based on police reports and are kept only for accidents that involve actual injury to those involved. Damage only accidents, which occur on average three to four times more frequently than injury accidents but in general have a lower cost to society, are not therefore included in the accident analysis.

Traffic Modelling Methodology

4.126 Three tools have been used for developing the traffic forecasts. The primary tool is a new local traffic model developed for the present study. In addition reference has been made to the North East Clwyd Traffic Study model and additional assessments were carried out using a spreadsheet model.

4.127 A local traffic model has been developed using TRIPS software. The network includes the A494 in the study area between the River Dee and Alltami, the A55 between Broughton and Northop and the minor road network feeding and running parallel to the A494 in the study area. Traffic speeds on the network are calculated by reference to speed flow relationships. These have been derived from the standard functions used in COBA and described in the COBA Manual, DMRB Volume 13 (document DD41).

4.128 Traffic modelling has been carried out for a typical normal traffic day. The model does not represent days of particularly high or particularly low traffic flow. Models were developed for three time periods; a typical weekday morning peak hour, a typical weekday inter-peak hour and a typical weekday evening peak hour.

Model Validation

4.129 Validation of the model is the process in which the model is calibrated and the modelled traffic conditions are compared to the observed traffic conditions. The criteria for assessing the degree of fit between a model and observed traffic are laid out in Volume 12a of the DMRB (document DD41).

4.130 A comparison of the modelled and observed journey times shows that the model is capable of reflecting the observed journey times in both the peak and inter-peak periods.

Traffic Forecasting Methodology

4.131 Annual Average Daily Traffic (AADT) flows were derived from traffic count data for the period 1998 to 2006. 1998 was selected as the cut off point, since this was the opening year for the Flintshire Bridge, and comparisons with earlier years would need to take account of the impact of this scheme. Recent trends suggest that traffic growth in Wales has been greater than traffic growth in the UK as a whole. Figure 1 of the Appendix to document DD36 shows that since 1998 traffic volumes on all major roads in Wales have grown by some 12% whilst traffic on all major UK roads has grown by around 9%. In this time period traffic levels on the A494 at Aston Hill has grown by some 10%.

4.132 The figure shows that in 1999 and 2000 there was little or no growth. This was due in 1999 to the effects of national fuel disputes and in 2000 to the foot and mouth outbreak. This can be used as an indicator of how traffic may grow in the future, although past growth trends are no guarantee of how future traffic will grow.

4.133 The published central growth figures for future national traffic growth are shown in National Road Traffic Forecasts (Great Britain) 1997 (NRTF) (document DD47) and are compared to the observed growth on the A494 from 2001 to 2006 in Figure 2 of the Appendix to document DD36. This figure is based on 2001 to exclude the impacts observed in 1999 and 2000 described above which could not be allowed for in NRTF.

4.134 Local variations in traffic growth result from local variations in demographics and future economic development. These differences at a local level are reflected in the Department for Transport's TEMPRO database 2006 (document DD48). TEMPRO provides estimates of local travel growth, based on anticipated changes in population, employment and car ownership at a local level. Table 3 of document DD36 provides a comparison between local and national forecast growth rates from TEMPRO.

4.135 The table shows that traffic levels in Shotton and Flintshire are forecast to grow at rates similar to, but slightly lower than, national rates in the period up to 2025.

4.136 The use of NRTF and TEMPRO provides a single estimate of future traffic growth. The derivation of these factors is based on certain assumptions regarding the national and local economies, which are subject to a degree of variation. To take account of this variation, rather than depending on a single view of the future, a band of growth is developed ranging between the low growth and high growth assumptions.

4.137 The TEMPRO and NRTF growth factors take account of changes in traffic due to natural changes in demographic and economic parameters in the area. They do not take account of the impact of specific local developments that have particular impacts on traffic flow. Three major developments have

been identified that would have an impact different to that forecast by TEMPRO. These are the A5117/A550 Deeside Junctions Improvement Scheme, the Deeside Park and Northern Gateway Developments together with the St David's Business Park.

4.138 These factors have been applied to the base year (2005) traffic flows to derive future traffic forecasts. The following sequence of steps was used in producing demand matrices for 2010 and for 2025.

- NRTF central growth rates have been applied to the long distance traffic that remains on the A494 through the study area;
- Local TEMPRO factors have been applied to local trips that either join or leave the A494 within the study area;
- Additional through trips have been added to take account of the forecast change in traffic on the A494 resulting from the Deeside Junctions scheme;
- Additional trips have been added to the model to take account of new traffic to and from the Deeside Park site.

4.139 At the first step growth rates were applied to the base year demand matrices at a zonal level. Growth rates were derived separately from TEMPRO at National, Flintshire and Shotton levels.

4.140 The numbers of trips originating and terminating in the Queensferry and Connah's Quay areas were factored by the appropriate growth rate for Shotton. The numbers of trips originating or terminating in all other local areas were factored by the appropriate growth rate for Flintshire. The numbers of trips originating or terminating outside the immediate study area were factored by the appropriate National growth rate. Additional traffic was then added to represent the impact of the A5117 Deeside Junctions scheme. Traffic forecasts produced for this scheme (document DD88) showed that as a result of the scheme there would be an increase of some 3,800 vehicles (AADT) on the A494 at Aston Hill.

4.141 Additional traffic was added to represent new trips to the proposed developments. In the central growth case only Deeside Park and Northern Gateway were considered.

4.142 Included within the methodology is an assessment of potential suppressed demand and peak spreading. The effect of induced traffic has been assessed as part of the forecasting methodology. As no new trip attractors or generators not accounted for in the do minimum situation are proposed then it is not considered that totally new trips would be generated by the scheme.

4.143 This approach was repeated using lower growth assumptions to investigate

the viability of the scheme should traffic growth rates not achieve the forecast levels. The low growth forecasts were derived using low growth NRTF and TEMPRO forecasts, the impact of A5117 Deeside Park Junctions scheme and with no additional development traffic.

4.144 Environmental assessment procedures require an evaluation to be made under high growth assumptions. For this purpose a set of high growth forecasts were made using high growth NRTF and TEMPRO forecasts , the impact of A5117 Deeside Park Junctions scheme, additional development traffic to Deeside Park, Northern Gateway and St David's Park.

Present Traffic Conditions

4.145 To assess the relationship between link capacity and traffic volumes reference is made to the Congestion Reference Flow (CRF). CRFs are calculated values used as an indication of how a link will perform in terms of journey time reliability and delays when compared against traffic flows. They are a function of peak hour flows and directional differences, percentage peak hour goods vehicle volumes and AADT values. Therefore as flows change in the forecast years CRF values may change. This is only one element of the overall appraisal process, which includes transport economics and accidents. It should not be used as the absolute measure of overall scheme performance, but as one of a series of tools.

4.146 The CRF of a link is an estimate of the AADT flow level at which the carriageway is likely to be congested in peak periods on an average day. For the purpose of calculating CRF congestion is defined as the situation where the hourly traffic demand exceeds the maximum sustainable hourly throughput of the link. The congestion reference flow can also be regarded as the point at which traffic would no longer be able to travel at the speed it wished to.

4.147 The volume of traffic using the A494 at Aston Hill in the base year (2005) was some 61,800 AADT. Of this approximately 8% consists of medium and heavy goods vehicles. Daily traffic is subject to two major peak periods of flow, during the morning the main direction of flow is northbound and during the evening the main direction of flow is southbound. During an average working day the traffic volume during these peak hours is about 3,500 vehicles per hour in the primary direction.

4.148 The average capacity of a dual carriageway is 1,800 vehicles per hour per lane, although actual capacity will fluctuate on a day to day basis depending on weather conditions and vehicle composition. The existing capacity is therefore 3,600 vehicles per hour in each direction.

4.149 During the summer and holiday periods, the peak flows are increased, in particular on the southbound carriageway on a Friday evening. The annual flow profile is shown in Figure 4 of the Appendix to document DD36, which shows that the average traffic volume over a summer week reaches some

70,000, with peak daily flows of around 80,000 during which times congestion arises. This demonstrates that for much of the year traffic volumes are at a level close to the CRF.

4.150 During periods of high traffic flow speeds fall. This is particularly observed on the southbound carriageway where slow moving vehicles on the uphill section frequently cause queues.

4.151 An assessment of traffic patterns on the route indicate that of the traffic on Aston Hill about 26% is considered to be through traffic using the A494 as part of the M56 to A55 strategic corridor. That is, of all the traffic entering Wales at Deeside, only some 26% has a destination beyond Northop on the A55. The remaining 74% is local and sub regional traffic, with a very wide range of origins and destinations being catered for by the route.

4.152 Inspectors note: In some evidence the percentage of local traffic varies from between 74% and 78%. In response to questioning, the promoters clarified that these differences are due to variations in total traffic on differing sections of the route, thus giving rise to differing percentages. The total volume of through traffic remaining constant. These are not inconsistencies and I have not sought to amend the evidence.

Accidents

4.153 A total of 91 personal injury accidents occurred on this section of the A494 in the five years from 2001 to 2006. The average severity split is 90% slight accidents, 9% serious accidents and 1% of fatal accidents. Of the accidents, 47 are associated with the major junctions, a further 15 occurred at the merges with the main line and 29 occurred on the mainline between junctions.

4.154 The majority of the accidents are clustered around the junctions, particularly at Queensferry and St David's Park where accidents are generally due to failing to stop on the slip roads at the roundabout. There are also clusters of accidents on the main carriageway associated with the on slip merges. There is a further cluster on the southbound carriageway at Aston Hill. These are predominantly due to slow moving or stationary vehicles in the inside lane. Six such accidents occurred during the five year period.

4.155 The standard measurement of vehicle accident rates on road sections is the number of personal injury accidents per million vehicle kilometres (pia per mvkm) on a route section. The average accident rate for a dual carriageway in the UK is 0.11 pia per mvkm. The observed rates on the A494 between Ewloe and Drome Corner were some 0.11 pia per mvkm (southbound) and 0.08 pia per mvkm (northbound). Overall on the route the average accident rate is around 0.09 pia per mvkm. The route section with the highest rate is the uphill section on Aston Hill where the accident rate is about 0.13, which is higher than the national average.

Future Traffic Volumes

4.156 Traffic forecasts have been produced for two years, 2010 which has been assumed to be the year the scheme would open to traffic; and 2025, the scheme's design year.

4.157 The forecast traffic flows with and without the scheme in 2010 and 2025 are shown in figures 5 and 6, and 7 and 8 of document DD36 respectively.

Without scheme

4.158 The traffic forecasts predict that, without the scheme and under central growth assumptions, average traffic flows on the A494 would grow by some 13% between 2005 and 2010 and by about 36% between 2005 and 2025.

4.159 Traffic flows in 2010 and 2025, on central growth would be: -

Section	2010 AADT	2025 AADT
North of Queensferry	69,700	84,800
Queensferry to Plough Lane	65,900	79,300
Plough Lane to St David's Park	70,100	84,300
South of St David's Park	66,400	79,400

4.160 The CRF has been calculated to be 71,000. Consequently the flows on the A494 between Ewloe and Drome Corner are forecast to be between 93% and 99% of the CRF by 2010. At this level traffic congestion would be a frequent peak problem during the average week. Any incident on the carriageway would lead to lengthy queues and delays.

4.161 By 2025 the flows on the A494 between Ewloe and Drome Corner are forecast to be between 112% and 119% of the CRF. This would lead to spreading of the peak periods such that the highest levels of congestion would exist on the carriageway for several hours each day. If the growth in traffic followed the low growth profile then average traffic volumes would grow by some 10% between 2005 and 2010 and by about 26% between 2005 and 2025.

4.162 The traffic flows on the A494 in 2010 and 2025 on low growth would be: - would be: -

Section	2010 AADT	2025 AADT
North of Queensferry	67,200	77,680
Queensferry to Plough Lane	64,000	73,200
Plough Lane to St David's Park	68,200	77,800
South of St David's Park	64,600	73,200

4.163 The traffic volume on Aston Hill would be some 96% of the CRF value in 2010 and some 110% of the CRF in 2025. This shows that even if traffic grew at the lowest predicted rate, the route would be close to capacity by 2010 and would be significantly over its capacity by 2025.

With scheme

4.164 With the proposed scheme in place the traffic volumes, assuming the central growth rate, on the route would be as shown below: -

Section	2010 AADT	2025 AADT
North of Queensferry	70,100	87,200
Queensferry to Plough Lane	68,100	83,400
Plough Lane to St David's Park	68,100	83,400
South of St David's Park	60,700	74,200

4.165 The CRF for the new carriageway has been calculated as 106,000. Thus the traffic volume in 2025 would be about 79% of the CRF. This would ensure that traffic would continue to flow freely up to 2025. The closure of the junction at Plough lane would affect traffic volumes on the A494 such that between St David's Park and Plough Lane the traffic volume with the scheme would be lower than without the scheme. Between Plough lane and Queensferry the volume with the scheme would be higher than without the scheme.

Future Traffic Conditions on Local Road Network

Aston Road

4.166 The closure of the A494 junction at Plough Lane would affect traffic levels on Aston Road in two ways; traffic currently leaving the A494 Northbound at the Plough Lane junction to travel along Aston Road northbound to Queensferry would be unable to do so; As a result of the scheme traffic volumes on Aston Road would be as shown below: -

Year	Flow Without Scheme	Flow With Scheme	Change in Flow	% Change
2010	5,000	6,500	+1,500	+30%
2025	5,800	7,400	+1,600	+28%

4.167 The CRF for Aston Road is calculated to be 18,000.

Aston Distributor Road

4.168 A new link would be provided between St David's Park Interchange and Plough Lane to provide for movements that would currently use the south facing slip roads at Plough Lane. Traffic volumes on this link road would be about 4,900 AADT in 2010 and 5,600 AADT in 2025. The CRF for the Aston Distributor Road is calculated to be some 23,000 and consequently the capacity provided is sufficient for the forecast traffic volumes.

Northbound off slip at St David's Park Interchange

4.169 The scheme would include the closure of the Northbound off slip at St David's Park. Without the scheme the traffic volumes on this slip would be about 6,000 AADT in 2010 and about 6,800 in 2025. There are three main traffic movements currently served by this slip road; from A55 East, from A55 West and from A494 South West.

4.170 A new link road from Ewloe Interchange to Ewloe Green would carry traffic from the A55 East. The volume of traffic on this link is forecast to be some 2,750 AADT in 2010 and some 3,200 in 2025. The CRF of this link is calculated to be 22,000 and consequently the capacity provided by this link would be sufficient for the forecast traffic volumes.

4.171 Traffic from the A494 Mold Road or the A55 from Northop would have the option of either using the A494 northbound to Queensferry and then travelling round the roundabout to A494 southbound back to St David's Park, or using the local road network. Traffic from the A55 west to the Ewloe Green and St David's Park area would also have the option to leave

the A55 at the Brookside junction near Northop Hall and travel along the B5125 into Ewloe.

4.172 The increase in traffic volumes on the B5125 between the junction east of Northop Hall and Ewloe would be some 2,950 AADT (about 49%) in 2010 and some 3,440 AADT (about 49%) in 2025.

4.173 Traffic currently using the A494 (Mold Road) would travel to St David's Park either via Northop and the A55 or via the A549 and B5127 through Buckley to Ewloe Green. This would lead to the following changes in traffic volumes:

A5119 between Soughton and Northop

Year	Flow Without Scheme	Flow With Scheme	Change in Flow	% Change
2010	15,690	15,980	+290	+2%
2025	18,270	18,620	+350	+2%

A5119 through Northop

Year	Flow Without Scheme	Flow With Scheme	Change in Flow	% Change
2010	14,060	14,350	+290	+2%
2025	16,370	16,720	+350	+2%

A549 through Buckley

Year	Flow Without Scheme	Flow With Scheme	Change in Flow	% Change
2010	12,260	12,640	+380	+3%
2025	14,280	14,730	+450	+3%

B5127 between Buckley and Ewloe Green

Year	Flow Without Scheme	Flow With Scheme	Change in Flow	% Change

2010	9,500	9,800	+300	+3%
2025	11,060	11,430	+370	+3%

A494 North of Alltami

Year	Flow Without Scheme	Flow With Scheme	Change in Flow	% Change
2010	19,750	18,930	-620	-4%
2025	23,000	22,010	-990	-4%

Economic Assessment of the Scheme

4.174 An economic assessment over a 60 year appraisal period has been carried out starting from the scheme opening year (2010). Three analyses have been carried out

- A Transport User Benefit Appraisal (TUBA) to quantify benefits to users in terms of changes in travel time and vehicle operating costs;
- A Cost Benefit Analysis (COBA) to quantify benefits derived from changes in accident numbers; and
- A Queues and Delays at Road works (QUADRO) assessment to quantify benefits due to time savings during routine maintenance.

4.175 The TUBA assessment was based on version 1.7a, released September 2006. TUBA requires input of economic parameters, scheme costs and traffic data in matrix format. The TUBA appraisal covers the period of the scheme from its opening year of 2010 to the end of 2069.

4.176 Scheme costs in TUBA have been input at factor cost rates. Construction costs have been allocated to the years 2008, 2009 and 2010 in a ratio of 40:40:20 and preparation costs have been allocated evenly between 2005 and 2007. The land costs have been all allocated to the year 2008. Supervision costs have been allocated to the construction years in the same ratio as the construction costs. The scheme costs have been based on the most recent estimate for Q4 2006. An optimism bias rate of 5% has been applied to each value for input to the economic assessment. Optimism bias is an additional cost, specified by the Department for Transport to represent the level of likely risk to the Assembly Government of overspend on the project. The value of 5% is appropriate for a scheme at the Public Inquiry stage.

4.177 Costs and benefits for the central and low growth TUBA are detailed in Tables 8 and 9 of document DD36 respectively. The TUBA results include all direct and indirect taxation and give a Net Present Value (NPV) of £41.8 million for the central case and £23.3 million for the low growth case. The scheme would therefore have positive economic benefits whatever long term economic forecasts occur over the 60 year appraisal period.

4.178 The likely impacts of the scheme on accident numbers and severity were assessed using COBA version 11.6 (part of DMRB, document DD41). A comparison of the actual accident rates for the A494 over the period 2001 to 2006 showed that these were very close to the national average rate of 0.11 personal injury accidents per million vehicle kilometres (pia/mvkm) for a 50mph dual carriageway. COBA default accident rates do not distinguish between 50 mph and 70 mph speed limits on dual carriageways implying that for this analysis the change in speed limit does not affect the forecast accident rate.

4.179 In accordance with the DMRB (document DD41) Volume 13 Section 1 Part 2 Chapter 3 Paragraph 3.4 which states that general policy is to discourage the use of local severity splits unless it can be shown that exceptional conditions genuinely arise which are unlikely to be corrected by modest remedial works, the default COBA severity splits were used for this assessment.

4.180 The following table summarises the number and severity of accidents and casualties which would result from the scheme and the results have been discounted over a 60 year period from 2011 to 2070. The table shows that the impact of the scheme would be slightly beneficial in terms of accident numbers. There would be of the order of a 3% reduction in the number of accidents on the route during the lifetime of the scheme, leading to a predicted reduction of 13 serious and 137 slight injuries.

		Do Minimum	**Do Something**	**Benefits**
Number of Accidents		2,917	2,820	97
Number of Casualties	**Fatal**	49	49	0
	Serious	410	397	13
	Slight	3,901	3,763	137
Accident Costs (£m)		133.61	129.93	3.69

4.181 QUADRO4 (Queues And Delays at Road works) (part of DMRB, document DD41) has been used to appraise and compare maintenance strategies of the existing dual two lane carriageway compared to the dual three lane scheme over 60 years. These involve different sequences of work (reconstruction, replacing wearing course etc) on the carriageway. QUADRO benefits are derived from delaying the need to carry out maintenance on the existing carriageway and when maintenance is necessary additional lanes ensure that delays to traffic would be less severe.

4.182 The QUADRO results show that the scheme would return substantial maintenance benefits, with an NPV of £46.5million.

Overall Economic Assessment

4.183 The overall economic result combines the separate TUBA, COBA and QUADRO assessments. The results show that for the central growth estimate the NPV of the scheme is forecast to be £91.9 million with a benefit to cost ratio (BCR) of 2.5.

4.184 For low traffic growth the NPV is £68.6 million and the BCR is 2.1, which shows that if future traffic growth is at the lower end of the range, the scheme would still return a positive benefit.

4.185 A further economic assessment has been undertaken to determine the impact of the climbing lane provision on the economic benefits. This assessment demonstrated that the present value of benefits for the scheme without the climbing lane was about £1 million lower than for the scheme with the climbing lane.

Environmental Assessment

4.186 An Environmental Impact Assessment (EIA) in the form of an Environmental Statement (ES) (document DD05) has been carried out for the scheme in accordance with the Highways (Assessment of Environmental Effects) Regulations 1999 (document DD49). The assessment work was preceded by a screening exercise, carried out in accordance with the Regulations and reported in the Record of Determination published in 2007 (document DD09). The ES was issued to statutory consultees in a draft form in March 2006 and published formally in January 2007. The Non-Technical Summary was also published separately (document DD22) and made widely available.

4.187 The proposed improvement would extend across the River Dee and Bala Lake Special Area of Conservation (SAC). An Appropriate Assessment screening exercise has been undertaken to consider the potential impacts of the proposed scheme on this SAC and on other Natura 2000 sites (the Dee Estuary Special Protection Area, Dee Estuary (proposed) SAC and Ramsar site, the Deeside and Buckley Newt Sites SAC) within a 10 kilometre radius, identified in consultation with the Countryside Council for Wales (CCW).

The screening exercise concluded that there was the potential for significant effects, and so a full Statement to Inform an Appropriate Assessment ('Statement to Inform') (document WAG/12) has been prepared taking account of information gathered within the Environmental Assessment process and of further design development and surveys which took place after the publication of the ES.

4.188 Following consultation with CCW on the draft Statement to Inform, the document would be published for public comment. The Welsh Assembly Government would consider the Statement to Inform together with any representations received, and issue a decision before the Orders could be made.

4.189 A number of statutory consents might be required for works affecting legally-protected species of wildlife, before construction could commence. These consent applications have been discussed with CCW and drafted. In accordance with procedures, they would be submitted to the relevant bodies if the Minister issues a Notice to Proceed with the scheme.

4.190 Commitments made in the Environmental Statement and in consultation with landowners, residents and consultees would be carried through into the detailed design, construction and routine maintenance stages. In particular, the construction and operation of the proposed scheme would need to be carried out in a way that complies with environmental legislation and the conditions of any formal approvals, consents, permits and licences.

4.191 The Construction Environmental Management Plan (CEMP) is the mechanism by which the project team manages the environmental aspects of the implementation of the project. The CEMP is prepared in outline during the early phases of the project design and developed and reviewed progressively throughout the life of the project.

4.192 An early draft of the CEMP is contained within the Volume 2 Part 2 Appendix 1 of the Environmental Statement (document DD05). A further 'Public Local Inquiry Draft', taking account of consultations since publication of the ES, is included at document DD51. Further drafts would be prepared as needed. If a Notice to Proceed is issued then the components of the CEMP would be developed during detailed design.

Air Quality

Policy

4.193 The provisions of Part IV of the *Environment Act 1995* (document DD76) establish a national framework for air quality management, which requires all local authorities in England, Scotland and Wales to conduct local air quality reviews.

4.194 The Air Quality Standards (Wales) Regulations 2007 (document DD79) set standards and objectives for the seven local ambient air pollutants that have been identified as having the potential to cause harm to human health. The UK standards are listed in Table 1.5 of the Environmental Statement, Volume 2, Part 1: Air Quality (document DD05).

4.195 The UK standards have been set in order to '*define the level of pollution below which health effects are unlikely to be experienced even by the most sensitive members of the population*' (DMRB Interim Advice Note 94/07 (document DD60)).

4.196 Should local air quality reviews indicate that the objectives, as prescribed in the Air Quality Standards (Wales) Regulations 2007, are not likely to be met, the local authority is required to designate an Air Quality Management Area (AQMA). Action must then be taken at a local level to ensure that air quality in the area improves. This process is known as 'Local Air Quality Management'.

4.197 Flintshire County Council (FCC) has undertaken air quality reviews within the boundaries of the County. The Council has not declared an AQMA within the County, because there are no locations where exceedences of the UK objectives have been monitored or are predicted.

Existing conditions

4.198 The annual mean concentrations of nitrogen dioxide (NO_2) and particulate matter with an aerodynamic size of less than 10 microns (PM_{10}), measured at a roadside site on Aston Hill in 2003/4, were some 40.6 micrograms per cubic metre (µg/m^3) and 22.0 µg/m^3 respectively. This compares to the annual mean standards for NO_2 and PM_{10} of 40 µg/m^3.

4.199 The annual mean concentration of NO_2 at a roadside location along the route at Aston Mead (at around 18 metres from the kerbside) in 2005 was some 37 µg/m^3 compared to the annual mean standard of 40 µg/m^3. This compares with the annual mean concentration of NO_2 in 2005 at Moorfield Court, an urban background location based some 49 metres from the A494 centreline, of around 19 µg/m^3. This difference illustrates the rapid decrease in pollutant concentrations from the A494 roadside. Rural background concentrations in Flintshire vary between 7 µg/m^3 and 15 µg/m^3.

4.200 The air quality study comprises five assessment methodologies: localised, generalised, regional, ecosystems and construction, as follows:

- Localised Assessment – prediction of pollutant concentrations and the scheme impact on these concentrations at sensitive receptors[1] in the study area;
- Generalised Assessment – prediction of the impact on exposure to pollutant concentrations of sensitive receptors within 200 metres of the roads in the study area;
- Regional Assessment – prediction of the pollutant emissions and the scheme impact on these emissions throughout the study area;
- Ecosystems Assessment – prediction of oxides of nitrogen (NO_X) concentrations and nitrogen deposition at receptors within Designated Sites;
- Construction Assessment – qualitative assessment of the dust impacts and the impacts on pollutants from construction traffic and plant with the recommendation of appropriate mitigation measures.

Methodology and Assessment

Localised Assessment

4.201 Pollutant concentrations have been predicted at twenty-nine sensitive receptors. These receptor locations were selected along the road corridor at locations likely to experience the highest pollutant concentrations and impacts, and at receptors of particular sensitivity such as schools. The location of the sensitive receptors selected is shown in Drawings 36057/Vol2/1.1 and 1.2 in Environmental Statement, Volume 2 Part 1 (document DD05).

4.202 Dispersion Modelling Software known as AAQuIRE has been used to predict concentrations of the two major traffic-related pollutants of concern, NO_2 and PM_{10}. The AAQuIRE model has been approved for use in Local Air Quality Management by the Welsh Assembly Government.

4.203 An existing case (2005) was modelled and validated with FCC monitoring data. Predictions were also made for two future years: the proposed opening year (2010) and the design year (2025). The predictions for the future years were made for two scenarios: without the proposed scheme (Do Minimum) and with the proposed scheme (Do Something).

4.204 The likely impact on air quality from the proposed road scheme is described in detail in the Environmental Statement, Volume 2, Part 1: Air Quality

[1] Sensitive receptors are people, places or objects which are exposed to an impact and could be affected by it. For example, people in residential property would be sensitive to traffic noise, whereas people in shops and business premises would not.

(document DD05). Pollutant concentrations, at the selected sensitive receptors, are predicted to show both increases and decreases, dependent on their location relative to the revised road layout.

4.205 No exceedences of the UK air quality standards are predicted at the sensitive receptors selected, with or without the proposed scheme.

4.206 The highest predicted NO_2 concentration would be on Queen Street. With the scheme, the annual mean would be less than 70% of the UK standard. This compares to an annual mean of around 80% of the UK standard in the existing case (2005).

4.207 The highest predicted PM_{10} concentration would also be on Queen Street. With the scheme, the annual mean would be some 51% of the UK standard. This compares to an annual mean of about 55% of the UK standard in the existing case (2005). The impact of the proposed scheme would be slightly greater concentrations at some receptors, slightly lower concentrations at some receptors, and neutral at the remainder.

Generalised Assessment

4.208 The generalised assessment requires the counting of properties within 200 metres of all affected roads in the study area. These properties are grouped into four bands: 0-50 metres from roadside; 50-100 metres from roadside; 100-150 metres from roadside; and 150-200 metres from roadside.

4.209 The concentrations of NO_2 and PM_{10} are then predicted using the DMRB model within each band for each road for both the Do Minimum and Do Something scenarios. The change in concentration is then multiplied by the property count to give a measure of the change of exposure for that band. The results from all four bands are summed together to get an overall change of exposure for each road. The overall change of exposure for the scheme is determined by summing the exposure scores for all the roads.

4.210 The generalised assessment indicates that overall exposure to the main traffic pollutants would decrease in the study area. This decrease would be due to the movement of the road alignment away from the majority of houses along the route. The overall assessment is that there would be a minor, beneficial impact on the exposure to air quality in the area.

Regional Assessment

4.211 The regional assessment predicts the total emissions from the road network. The emissions of five pollutants are predicted by the DMRB model: carbon monoxide (CO), Total Hydrocarbons (THC), oxides of nitrogen (NO_X), particulate matter (PM_{10}) and carbon dioxide (CO_2).

4.212 These emissions are predicted for the existing case (2005) and two future years: the proposed opening year (2010) and the design year (2025). The predictions for the future years are made for both the Do Minimum and Do Something scenarios.

4.213 The regional assessment looks purely at the quantity of pollutants emitted by vehicles using the roads within the study area, but not their impact on the local population.

4.214 The regional assessment concludes that for the pollutants assessed, total emissions with the proposed scheme would increase by between 0% and 36% in the 2010 scenario. The corresponding figures for 2025 are -11% and 41%. These changes are due primarily to the increase in vehicle speeds along the A494. Total emissions in 2010 would be lower than for the existing case (2005) for all pollutants except CO_2. This would be due to the general improvement in emissions technology, which would offset the traffic growth predicted. By 2025 the emissions of carbon monoxide and hydrocarbons from traffic using the proposed scheme would be lower than for the Do minimum option, because of substantial congestion in the latter case which raises emission rates for these pollutants. Emissions of NO_x, PM_{10} and CO_2 would be higher with the proposed scheme. The proposed scheme would allow vehicles to travel at the national speed limit for more of the time. The predicted increases in the main traffic-generated pollutants, namely NO_2, PM_{10} and CO_2, indicated that the impact of the proposed scheme would be moderate, adverse.

Ecosystems Assessment

4.215 The ecosystems assessment is undertaken for Designated Sites, using the methodology outlined in DMRB Interim Advice Note 61/05 (document DD61). The prediction of concentrations and deposition rates are, therefore, made at the River Dee, which is designated as a Site of Special Scientific Interest (SSSI). Concentrations and deposition rates for NO_X are predicted along a 200 metre transect from the River Dee Bridge along the banks of the river.

4.216 At the River Dee Bridge, the vegetation objective, set by the UK Government and adopted by the Welsh Assembly Government, for NO_X is predicted to be exceeded at 29 of the 32 receptors along the River Dee in the base case scenario. In 2010, 7 out of 32 receptors are predicted to exceed this limit in the Do Minimum case, and 20 out of 32 in the Do Something case. In 2025, this is predicted to have fallen to 0 receptors in the Do Minimum scenario and 9 in the Do Something scenario. This objective is purely a guide in this location, as it does not fully apply to vegetation in locations within 5 kilometres of built-up areas.

4.217 The highest predicted total nitrogen deposition is some 20.8 kilograms per hectare per year (kgN/ha/yr) at a sensitive receptor near to the River Dee crossing. This deposition rate is well within the critical load of nitrogen deposition upon saltmarsh, which is 30 to 40 kgN/ha/year. Therefore, the

highest predicted deposition rate is about 69% of the lower limit of the critical loading of nitrogen deposition upon saltmarsh.

4.218 The greatest predicted impact, derived from subtracting the Do Minimum results from the Do Something results, from the scheme is about 0.4 kgN/ha/yr, which is some 1.3% of the lower limit of the critical loading.

4.219 The overall impact for the Ecosystems Assessment is predicted to be of a minor adverse nature.

Construction Assessment

4.220 The construction impact on air quality is assessed qualitatively due to the transient nature of the dust-generating sources and the ill-defined emission rates from such sources. In addition, the pollutant emissions from vehicles and plant are assessed qualitatively. The construction assessment is undertaken with reference to professional experience, case studies and published reports.

4.221 The impact on air quality from the proposed road scheme in the construction phase is described in detail in the Environmental Statement, Volume 2, Part 1: Air Quality document (document DD05).

4.222 The construction assessment is that the impacts would be major due to the scale and duration of construction and the proximity of the receptors. A set of mitigation measures would be included for use in the Construction Environmental Management Plan (CEMP) (document DD51), which would reduce these impacts to a moderate significance.

Ecology and Nature Conservation

4.223 The proposed scheme would cross the River Dee and Bala Lake Special Area of Conservation (SAC), and pass within a 10 kilometre 'search radius' of two other sites designated under European legislation (Dee Estuary Special Protection Area (SPA)/Ramsar site/proposed SAC and Deeside and Buckley Newt Sites SAC). The other sites designated under UK legislation, within 10 kilometres and therefore considered within the Environmental Assessment, are shown in Appendix B of document DD37. They are:

i. River Dee and Bala Lake Site of Special Scientific Interest (SSSI);
ii. Buckley Claypits and Commons SSSI;
iii. Connah's Quay ponds and woodlands SSSI;
iv. Maes y Grug SSSI;
v. Shotton Lagoons and Reedbeds SSSI;
vi. Inner Marsh Farm Royal Society for the Protection of Birds reserve; and

vii. Connah's Quay nature reserve (Deeside Naturalists' Society).

4.224 Site (i) covers the whole river from its source. Features of the designation that are found in the vicinity of the scheme are saltmarsh vegetation and water vole.

4.225 Sites (ii) – (iv) are of particular interest because of their populations of Great Crested Newt and other amphibian species, and the vegetation types that the sites support. The potential for impacts on Great Crested Newts and amphibians is minimal because these species' foraging range does not extend to the area that would be disturbed by the construction or operation of the scheme.

4.226 Sites (v) – (vii) are of particular interest for their vegetation types and the populations of birds that use the sites. No impacts from the proposed scheme are envisaged, due to the distance separating the sites from the proposed works.

4.227 The likely impacts on ecology are set out in detail in part 3 of volume 2 of the Environmental Statement (document DD05) together with proposed mitigation measures and likely residual impacts.

4.228 The construction of the works in the vicinity of the River Dee would be planned to minimise the potential impacts. Work within the river would avoid the fish migration period, and create temporary coffer dams so that piling and pier construction could be carried out in isolation from the water, to minimise the risk of pollution and sediment disturbance. Additional cover for migrating fish, in the form of rocks, concrete pipes or other materials placed on the river bed, would be provided to reduce the risk of predation on fish which are unable to move upstream against increased peak tidal flow (approximately 35% increase in velocity) through the constricted section of river.

4.229 Measures have been designed that would avoid or minimise impacts on species and habitats, during construction and during the operation of the proposed scheme. These include: -

- the timing of the works to avoid disturbance in sensitive periods;
- undertaking disturbing works under licence and the supervision of an ecologist;
- the provision of replacement habitats;
- the translocation of water voles and their reintroduction once new habitat is suitable; and
- the re-use of selected seed-rich soils.

4.230 All landscape areas would be designed to maximise their ecological value, using native species of local provenance where appropriate. The objectives of the Welsh Assembly Government Trunk Road Estate Biodiversity Action Plan ('TREBAP', document DD52) have been taken into account.

4.231 The assessment of the proposed scheme incorporating these mitigation measures, and reported in the Environmental Assessment, is that where the residual impacts would be negative the level of impact would be minor; there would be no impact on some habitats and species, and there would be moderate or major positive impacts on others. The overall impacts of the scheme on ecology and nature conservation would be neutral.

4.232 This is shown in the following table: -

HABITAT / SPECIES	EFFECT OF PROPOSED SCHEME	LEVEL OF IMPACT before mitigation	EFFECT with mitigation	LEVEL OF IMPACT post-mitigation
Intertidal Habitat	Neutral	No impact	Neutral	No impact
Saltmarsh	Negative	Minor	Positive	Moderate
Woodland	Negative	Moderate	Negative	Minor
Scrub	Negative	No impact	Positive	Moderate
Tall Herb vegetation	Negative	Minor	Positive	Moderate
Invertebrates	Neutral	No impact	Neutral	No impact
Lamprey	Negative	Moderate	Neutral	No impact
Salmonid Fish	Negative	Moderate	Neutral	No impact
Great Crested Newt	Neutral	No impact	Neutral	No impact
Reptiles - all species	Negative	Minor	Neutral	No impact
Birds - Migratory	Negative	Minor	Neutral	No impact
Birds - Breeding	Negative	Major	Neutral	No impact
Water Vole	Major Negative	Major	Positive	Major
Bats - all species	Negative	Major	Positive	Moderate

Landscape and Visual Impact

4.233 The landscape and visual impact assessment has been carried out in accordance with the guidelines set out in the DMRB (document DD41) Volume 11 Section 3 Part 5 with reference to the Landscape Institute and the Institute of Environmental Management and Assessment guidance

document 'Guidelines for Landscape and Visual Impact Assessment (Second Edition)' (document DD53).

4.234 The assessment considers:

- The character and quality of the landscape through which the route would pass;
- The extent to which the proposed road improvement would be visible within the landscape;
- The likely landscape effects and the potential for mitigation of the impacts; and
- The likely impact on sensitive receptors and the potential for mitigation of the impacts.

4.235 The impact on landscape character in the Design Year would be minor beneficial for 3 of the 25 Character Areas, neutral for 16, neutral – minor adverse for 1 and minor adverse for the remaining 5. The sources of the forecast impact include the increased width of visible road surfacing, greater visibility of moving vehicles, the loss of existing screening/softening by vegetation, the provision of new screen planting, the increased intensity of highway lighting and the beneficial impact of the removal of 'high-mast' lighting. The receptors of impact on landscape character are those people experiencing the landscape whether as residents or visitors.

4.236 The visual impact on receptors in the Design Year would be no change or a slight change for the large majority of properties. Out of the 1,799 residential properties and 120 business or community properties within the assessed area, some 38 properties would experience a moderate adverse impact in the winter, 15 in the summer. Some 14 properties would experience a moderate beneficial impact in the winter and some 76 in the summer. No properties would experience a substantial visual impact.

4.237 The assessment takes account of the proposed mitigation measures which include:

- The retention of as much of the existing vegetation as is practicable;
- New planting of trees and shrubs totalling over 62,000 square metres to improve screening and replace a similar area which would be lost in construction of the scheme;
- Planting of some 1.1 kilometres of new native hedgerows to integrate the highway with its surroundings, particularly where a field pattern still existed. These new hedgerows would extend to double the length of existing hedgerow lost in construction of the scheme;

- The use of earth mounding to raise the height and thereby increase the effectiveness of new planting as visual screening, particularly in the early years; and

- The 'grading out' of earthworks so that they could in part be returned to agricultural use.

4.238 Where noise barrier fencing would also have a visual screening effect this has been taken into account. Noise barriers across bridges at St David's Park Interchange and the River Dee would be translucent so that the barriers would not appear intrusive. Some views from the road into the adjacent landscape would be maintained, to give visual interest for road users and to maintain a sense of place. In the more urban centres such as the Queensferry Interchange, ornamental shrubs and amenity tree planting with groundcover shrubs would be used to reflect the surroundings.

4.239 The assessment takes account of the use of lighting and new sign gantries in accordance with applicable highway design standards. Existing 'high-mast' lighting at the St David's Park Interchange and Queensferry Interchange would be removed. The lighting system would cause less spillage of light from the lighting head than is currently the case, but the taller roadside columns and greater reflection of light from the road surface would make the lighting more noticeable from some viewpoints, particularly those at greater elevation such as the upper parts of Gladstone Way. The gantries would cause a new visual impact, particularly from viewpoints close to the gantries. New planting shown on the Environmental Masterplan in the ES (document DD05) would progressively soften the appearance of the gantries.

4.240 The assessment demonstrates that the overall effect on Landscape Character for the scheme area as a whole would be neutral. The large majority of properties would experience no change, and the overall residual visual impact of the proposed scheme would be neutral to slightly beneficial.

Land Use

4.241 The land use assessment has been carried out in accordance with the guidelines set out in the DMRB (document DD41) Volume 11 Section 3 Part 6.

4.242 Some 53 residential properties would be taken for the implementation of the scheme. 43 of these had (at the time of the ES) been purchased by the Welsh Assembly Government since 1996 and let to residential tenants who have been kept fully informed about the proposed scheme. Seven are owned by Hawarden Castle Estate with some let to tenants. One was owned by Flintshire County Council, one is owned privately, and the ownership of one long-abandoned property cannot be established. In addition, the site of the former Boswell's Farm had been purchased by the Welsh Assembly Government.

4.243 The proposed scheme would take:-

- Land within the curtilage of a cattery business at Holly House on Old Aston Hill;
- The outbuildings at Daisybank Farm currently used as a dog kennel business;
- Land associated with auto repair businesses at Queensferry;
- The civic amenity site and the County Council depot at Queensferry;
- Vacant land previously used by the car dismantlers' yard;
- Most of the haulage depot, including its direct access to the trunk road; and
- The direct access to the trunk road for a joinery business.

4.244 The proposed scheme would take areas of highway margin land at Queensferry Interchange and adjacent to Hillfield Road which are adjacent to public footpaths. At Queensferry the remaining area of grass and trees would be retained as the main pedestrian link to the subway. A new open area of 0.2 hectares of grass and trees would be provided at Aston Mead. These are shown on the Environmental Masterplan Drawing Sheet 3 of 7 (reference 36057/LS3003 ES) (document DD05). There would be no impacts on community land uses.

4.245 The agricultural land in the vicinity of the proposed scheme is shown on the Agricultural Land Classification 1:250,000 map to be in grades 2 and 3. At this scale the mapping does not distinguish between sub-grade 3a and sub-grade 3b, and so for the purpose of assessing impacts it is assumed that all grade 3 land was in the higher category (grade 3a). Grades 1, 2 and 3a are classed as the 'Best and Most Versatile' land for land use planning and policy purposes.

4.246 The assessment shows that approximately 11 hectares of land would be lost from agricultural/equestrian use. Assuming that this land is all of 'Best and Most Versatile' quality, this loss would be of moderate significance.

Noise and vibration

4.247 The Design Manual for Roads and Bridges (DMRB) (document DD41) Volume 11 Section 3 Part 7 procedures have been used to assess the impact of the scheme and to identify locations where noise mitigation may be needed.

4.248 Construction noise levels have been calculated using the methodology of BS 5228: 1997 Noise and Vibration Control on Construction and Open Sites,

Part 1 (document DD66). Assumptions have been made regarding plant likely to be used for the construction phases based on discussions with the contractor.

Existing Conditions

4.249 All noise sensitive properties within 300 metres of the proposed scheme were identified for potential ambient noise monitoring. Ambient noise monitoring was undertaken at 8 representative locations selected in accordance with DMRB and listed in Table 3 of document DD39. Additional monitoring has been undertaken at a range of properties to provide a wider baseline of data for the purpose of monitoring noise during the construction period and for when the proposed scheme would be open to traffic.

4.250 In the immediate vicinity of the scheme, the noise climate is strongly influenced by road traffic noise from the A494. Due to the high volumes of traffic on the road, noise is continuous throughout the daytime and night-time. Noise from individual vehicles is clearly apparent. Generally beyond approximately 100 metres from the A494, due to screening from buildings and topographical features, and the effects of distance, road traffic noise from the A494 is less dominant. Here the A494 is more of a distant background drone. At 300 metres the noise from individual vehicles is not clearly audible. Other significant sources of noise include road traffic noise from vehicles on local roads and railway noise.

4.251 Without the proposed scheme there would initially be a gradual road traffic noise increase due to natural growth in traffic, but this would be reversed as traffic growth progressively exceeds the capacity of the existing road leading to congestion and lower vehicle speeds. There would be a sudden improvement when the next resurfacing is carried out (using low-noise surfacing). By 2025 the net effect of congestion and resurfacing would be an overall decrease of 102 people bothered by road traffic noise compared to the 2010 Do Minimum scenario.

Likely impact of the Scheme

4.252 Information on traffic flows and composition has been taken from the Traffic Forecasting Report (DD45). Data for the opening year 2010 Do Minimum (DM) has been used to show noise levels in the vicinity of the scheme immediately prior to the scheme opening to traffic, that is the calculated noise level if the scheme was not built. Noise calculations have also been predicted for the future situation assuming the scheme is constructed as proposed. These were represented by the opening year 2010 Do Something (DS) and the design year of 2025 Do Something (DS).

4.253 The magnitude of the effect of the operation of the scheme has also been assessed by predicting noise levels due to traffic on all significantly affected roads for 2010, the year of opening (2010 DS) and 2025, 15 years after opening (2025 DS).

4.254 The proposed scheme includes the provision of noise barriers of specific heights (shown in Table 6 of document DD39) calculated to give the maximum noise reduction without excessive visual impact. These purpose-designed acoustic barriers would generally reduce operational noise levels in these areas to below the 2010 Do Minimum (2010DM) road traffic noise levels. In addition, a low noise road surface with a current Highway Authorities Product Approval Scheme Certificate has been assumed for three of the four scenarios (2010 DS, 2025 DM, 2025 DS). For the 2010 DM scenario noise levels have been calculated with the existing hot rolled asphalt road surface. Some stretches of the existing road have already been resurfaced with a low noise type and this has been allowed for in the predicted noise levels. By the design year (2025) it is expected that the existing surface will have been replaced with a low noise type whether or not the scheme proceeds.

4.255 The effects of these noise mitigation measures have been included in the predicted levels. It has been common practice in the preparation of Environmental Statements to limit the calculations for predicting noise levels to those required for determining eligibility under the Noise Insulation Regulations, and then to assess nuisance on the same basis. This approach gave a conservative or 'worst case' set of results. The number of residential properties, and thus the number of people likely to be bothered by noise, within each noise band is provided in the following table: -

Road Traffic Noise dB	Scheme Year and Descriptor			
	No. residents bothered `very much or quite a lot' by road traffic			
	2010 DM	2010 DS	2025 DM	2025 DS
<50	6	9	23	5
50<60	264	347	234	281
60<70	293	385	251	280
>70	135	33	89	49
TOTAL	699	774	597	616
Net Change DS-DM	**75 (increase)**		**19 (increase)**	

4.256 If the implementation of the proposed scheme is approved, the existing road surface would be retained until the reconstruction works, and therefore the relevant comparison is between the 2010 DS and the 2010 DM scenarios of the table. This illustrates that the operation of the scheme in 2010 would result in an immediate (worst-case) increase of some 75 in the predicted total number of people bothered by traffic noise. This increase is minor, representing approximately 1.5 % of the 5,000 or so residents living in the study area.

4.257 In the long term (in 2025), when reaction to the level of traffic noise would have reverted to the steady state relationship, the predicted total number

of people bothered by traffic noise with the proposed scheme would be some 19 more than the low noise surface DM scenario, but still some 83 fewer than with the 2010 DM situation which reflects current conditions. This increase is minor, less than 0.4 % of the total number of residents living in the vicinity of the scheme (approximately 5,000).

4.258 The scheme would have a beneficial impact on noise for those residents exposed to the highest noise level band (>70 dB), with the number of residents bothered 'very much or quite a lot' by road traffic noise predicted to decrease from some 135 to around 33 (a difference of 102) upon opening of the scheme. The number of people being bothered "very much or quite a lot" by road traffic noise within the lower noise bands (<50 and 50-60 and 60-70 dB(A)) is predicted to rise, leading to the slight overall increase in the number bothered.

4.259 Table 5 of document DD39 indicates that changes in road traffic noise levels due to the scheme would be generally Negligible or Slight, due to the proposed mitigation measures, with road traffic noise levels at the majority of properties predicted to decrease. Properties predicted to experience an increase are located in Queen Street (rated as Slight to Moderate), due to the predicted increase in traffic speed, and some properties in the vicinity of the Old Mold Road re-alignment which are predicted to experience a Moderate increase (Oakwood). Others in this area are predicted to experience Substantial decreases (Oak Royd).

4.260 Due to the proposed alignment of the scheme, a number of properties on the western side of the A494 are predicted to experience a likely decrease of as much as 6dB(A) in road traffic noise levels. A further comparison, between the forecast 2025 Do Something scenario and the 2010 Do Minimum which would be similar to the present day (2006) traffic noise levels, indicates that for 9 of the 11 individual properties shown the traffic noise levels with the proposed scheme would be lower than at present.

4.261 Two roads have been identified where road traffic flows are predicted to significantly increase as a result of the scheme. These are Brookside (A55-B5125) and the B5125 east of Northop Hall to Ewloe.

4.262 The predicted road traffic noise increases are approximately 6 dB(A) at Brookside and 2 dB(A) at east of Northop Hall to Ewloe. The likely increase at the B5125 east of Northop Hall to Ewloe is assessed to be Slight and the increase at Brookside (A55-B5125) to be Substantial.

4.263 With the mitigation measures employed, approximately 36 properties may qualify for treatment under the Noise Insulation Regulations 1975 (as amended) (document DD64). This entitles occupiers of dwellings which are subjected to noise at or above the specified level due to the use of a new or altered highway to noise insulation packages.

Vibration

4.264 The number of residents bothered by traffic vibration if the proposed scheme did not proceed is predicted to be approximately 123 by 2010. The mitigation measures within the proposed scheme would limit the effects of the scheme so that there would be a decrease in the number of people bothered by traffic vibration of some 38 in the short term (2010) and around 31 in the long term.

Noise and vibration during construction

4.265 Construction activities would be anticipated, at times, to result in the exceedence of either short-term or long-term suggested noise limits at several residential properties. This would be addressed by alternative low noise construction methods and/or reduced working hours and close liaison with the local authorities and local residents.

4.266 Predicted levels of vibration due to construction at local residential properties are not anticipated to result in cosmetic damage and levels of vibration exposure should prove acceptable to local residents. If any problems became apparent, they would be addressed by alternative construction methods.

Pedestrians, cyclists and community effects

4.267 The existing trunk road is aligned north-east to south-west and so the pattern of movement between locations on either side is from north-west to south-east and vice-versa. The available crossing points are listed in Table 7.2 of the ES (document DD05) and reflect existing footpaths and side roads close to the trunk road. The crossings consist of two footbridges, one highway bridge, two highway interchanges, two pedestrian subways, one uncontrolled at-grade crossing and one footpath alongside the River Dee.

4.268 The existing usage of these crossing points was surveyed in 1995 – 6. The most used of these locations were surveyed again in 2005 – 6. The daily use ranged from 499 pedestrians and cyclists using Queensferry subway in a 12-hour count period, to 32 pedestrians in a 12 hour count period using the Aston Hill subway. The Chevrons Road footbridge, which crosses the trunk road and Aston Road just south of ASDA, carried an average of some 43 pedestrians per day in the summer, predominantly in the period from 10 am to 8 pm. Winter use was an average of 32 per day. Cyclists were also observed to use the footway alongside Aston Hill, proceeding southwards via Old Aston Hill or the footway alongside the trunk road. There is no evidence of use of any of the affected routes by equestrians.

4.269 The proposed scheme would maintain or replace most of the existing routes across the trunk road. The footbridge at Ewloe, which is well used despite its steepness and steps, would be replaced by a new structure spanning the trunk road and connector road. This bridge would be designed to meet the

requirements of the Disability Discrimination Act, for the benefit of those not able to use the current bridge.

4.270 Routes via the St David's Park Interchange would be retained in largely their current form. The proposed Aston Distributor Road and footway would provide routes for cyclists and pedestrians currently using the footway alongside the trunk road at Aston Hill. The Aston subway, which is currently unattractive to many pedestrians but provides the only trunk road crossing between St David's Park Interchange and Plough Lane Bridge, would be replaced by a footpath along the south side of the Wrexham – Bidston railway and connected to Lower Aston Hall Lane by a new footbridge and a replacement footway alongside the new carriageway.

4.271 The existing Chevrons Road footbridge, which crosses the trunk road and Aston Road just south of the ASDA supermarket, would be removed and not replaced. A new bridge would have to span the widened trunk road, its on- and off-slip roads and the existing Aston Road. It would require extended approach ramps at each end to provide access within Disability Discrimination Act (DDA) requirements. The current pattern of use is considered insufficient to justify the cost of such a replacement structure since the alternative routes between the school campus/ASDA and Gladstone Way via Queensferry Interchange provide an acceptable alternative. The routes and distances are shown in Appendix C to document DD37.

4.272 The proposed scheme would also provide an improved footway/cycleway connecting Queensferry to the River Dee with a new dedicated crossing of the river to Garden City and the cycleway along the River Dee. This would provide an improvement in safety and amenity.

4.273 The likely impact of the scheme at specific locations is assessed to range from slightly adverse to moderately beneficial. 'Slightly adverse' is defined in DMRB Volume 11 Section 3 Part 8 'Where a material but not marked increase in existing journey length (defined as being up to an additional 250 metres) arises as a result of the new crossing arrangement or there is a partial reduction in amenity value and safety. It may also apply where a new bridge or subway has to be negotiated where none previously existed. 'Moderately Beneficial' is defined as a noticeable reduction in the existing journey length and time or a noticeable improvement in amenity value and safety.

4.274 The overall effect for pedestrians, cyclists and the community would be moderately beneficial.

Geology and soils

4.275 The proposed scheme would have no significant impacts on geology or soils.

Surface water quality and drainage

4.276 The proposed scheme would drain to watercourses, some of which currently receive untreated road run-off. By introducing balancing ponds, silt settlement and pollutant attenuation measures the scheme would have little or no impact on the receiving watercourses. Protection measures during construction would limit any impacts to a negligible magnitude. The scheme would also reduce the risk of pollution of watercourses arising from accidental spillage incidents.

Hydrogeology and contaminated land

4.277 Ground contamination along the route is very localised and not significant. Procedures to deal with any contaminated ground identified during the works would be prepared as a precaution. Impacts on groundwater and impacts arising from contaminated land would be minimal.

Cultural heritage

4.278 Much of the historical and archaeological interest in the vicinity of the route stems from the progressive industrialisation of the area, based on the mining of coal, its transport to the River Dee, and industrial processing or further transport by boat. Many of the sites recorded in the Gazetteer are of industrial origin.

4.279 Eight sites where the proposed scheme could have an impact have been identified. Each site is assigned a significance category from A to D where A is of national importance and D is minor or damaged sites. The degree of impact from the scheme, categorised as None, Slight or Considerable, was then assessed for each site. One of these, the Chester to Holyhead Railway, is categorised as being of significance category of C – sites of district or local importance. Such sites are not of sufficient importance to justify a recommendation for preservation, but merit adequate recording in advance of damage. The remaining sites were categorised as being of significance category D – sites of minor importance or so badly damaged that too little remains to justify their inclusion in a higher category. For these sites, basic recording in advance or during road construction would be sufficient.

4.280 It is likely that little or no evidence remains at these sites. An archaeologist would observe the disturbance of these sites during works, and record any evidence found. The sites recorded within the study corridor are either distant from the proposed works or have already been removed by earlier road construction or other works. As a consequence the potential impact of the works is slight, uncertain or none.

Impacts on vehicle travellers

4.281 The proposed scheme would have fewer junctions and less merging and weaving traffic, reducing the perceived danger on the route. Congestion

would be reduced, and so the scheme would have a beneficial effect on driver stress.

Impact on policies and plans

4.282 The assessment follows the advice of DMRB Volume 11 Section 3 Part 12. The policy documents reviewed included the following, which are currently approved by Flintshire County Council for development control purposes:

- *Alyn and Deeside Local Plan* (expired 2003) (document DD56);
- *Structure Plan Second Alteration: Flintshire Edition* (document DD57);
- *Flintshire Unitary Development Plan Deposit Draft September 2003* (2000 to 2015) (document DD59).

4.283 Impacts have been classified as Beneficial where the implementation of the proposed scheme would contribute to achieving policies and plans; Neutral where implementation would not impinge on the integrity of a specific policy, and Adverse where implementation would involve a noticeable conflict with a particular policy.

4.284 Clwyd Structure Plan Policy TRANS 6 states that 'the County Council will seek an early start to the following trunk road improvement schemes:' and includes the A494 Drome Corner to Ewloe scheme within the list. The proposed scheme would have a beneficial effect on 4 other Transport policies, a neutral or adverse effect on 4 Conservation of the Environment policies, and a beneficial effect on 2 Conservation of the Environment policies.

4.285 The Alyn and Deeside Local Plan (1994) includes Policy T2 which safeguards the route of the A494 River Dee to Ewloe from development. The proposed scheme would have a beneficial effect on 3 further transport policies; a neutral effect on policy A1 (agricultural land), a beneficial effect on 3 Environment policies and a neutral effect on 3 others, and a beneficial effect on 2 Development policies.

4.286 The Flintshire Draft UDP includes Policy AC17 which safeguards land for future road improvements including the A494/A550 Drome Corner – Ewloe. The proposed scheme would have an adverse effect on policy RE1 which protects agricultural land; and a neutral or beneficial effect on all other relevant policies as shown in the Environmental Statement Part 13 (document DD05). The UDP also identifies specific sites for employment uses, including those at Deeside Development Zone/Northern Gateway alongside the A494/A550, Warren Hall and Broughton Retail Park expansion.

Summary

4.287 The principal aim of the scheme is to improve journey time reliability, to reduce problems caused by congestion and to reduce accidents, particularly those caused on the steep gradient of Aston Hill.

4.288 The proposed scheme would upgrade the A494 to D3 or D4AP standard with hard shoulders and remove congestion by providing carriageways of sufficient capacity to accommodate forecast traffic growth. The proposals would further ease the congestion problems by the removal of the current conflict between mainline and local traffic movements.

4.289 The proposals would rationalise the number of junctions along this section of the A494, thus improving safety. Access to the remaining junctions would generally be improved, providing good connection to the local centres of population.

4.290 Utilising the infrastructure on the existing network, wherever possible, would minimise the impacts of the proposed improvement and reduce construction costs.

4.291 New local access roads, where provided, would deliver significant benefits for the local community as well as for all road users. The improvement would improve conditions for local people by providing improved and safe access for pedestrians and cyclists.

4.292 The improvement has been drawn up following extensive investigation and consideration and would deliver significant benefits for the local community and as well as for all national and regional road users. The protection and enhancement of the environment has been adequately taken into account.

4.293 There is clear justification that the scheme is required to address the current issues relating to journey time, congestion and safety. The benefits of constructing the scheme far outweigh the disbenefits. Any scheme of this type would have some adverse impact on the environment through which it passes as well as beneficial effects. There would be no disproportionate adverse impacts which would offset the beneficial economic, safety and operational effects. Given the levels of traffic and the predicted traffic growth, the scheme is expedient.

Modifications

4.294 The promoters propose 3 modifications to the draft Compulsory Purchase Order as follows: -

4.295 Modification No 1 would modify Plot 3/2b which is in the ownership of the National Assembly for Wales to omit a driveway, half of which is in the ownership of Miss Shenton and Mr Cresswell of 14 Mountfield Road. Miss

Shenton has confirmed her agreement to the modification. The relevant correspondence, original draft CPO Plans and Tables, revised CPO Plans and Tables are included at document WAG/3.

4.296 Modification No 2 follows correspondence with Mrs J France and relates to changes in the community boundaries which were in the wrong position on the draft CPO Plans. The relevant correspondence, original draft CPO Plans and Tables, revised CPO Plans and Tables are included at document WAG/3.

4.297 Modification No 3 relates to the reduction of Plot 1/3 in the ownership of Redrow Homes (North West). Redrow Homes have withdrawn their objection to the scheme as a result of the modification. The relevant correspondence, original draft CPO Plans and Tables, revised CPO Plans and Tables are included at document WAG/3.

5 THE CASE FOR THE SUPPORTERS

Written letters of support

The material points are: -

5.1 Four letters of support, largely in the form of proforma responses to the Orders publication exercise were submitted by local residents and businesses. One of these also objects to the proposed alternative routes.

5.2 The Chair of Governors of Ysgol Owen Jones Primary School supports the published scheme and also objects to the objectors' proposed alternatives.

5.3 North Wales Police Operational Support Division support the published proposals on the grounds of improved safety and reduced congestion, stressing the importance of the route as access to the Port of Holyhead and then to Ireland. It also supports the removal of the 50 mph speed limit.

5.4 Tourism Partnership North Wales supports the scheme, although it would pass through an intense urban area, it would improve accessibility to the region for visitors.

5.5 Wrexham County Borough Council support the scheme which would make significant improvements on the west/east European link provide relief to the A55 south of Chester especially the congested area in vicinity of A483/A55 interchange.

5.6 The North Wales Economic Forum supports the proposed improvement on the grounds that it would benefit companies and their employees and would be essential to the future economic development of the whole of North Wales. To abort the scheme would seriously damage the North Wales economy.

6 THE CASE FOR THE OBJECTORS

The material points are:

Flintshire County Council (objection No. 194)

6.1 Flintshire County Council appeared on day 3 to explain the current position with its objection. It is the local highway authority in respect of the highways within the County other than trunk roads.

6.2 The Council does not object to the draft Compulsory Purchase Order, but at the start of the inquiry had objections to some of the provisions of the draft Connecting Road and Slip Road Order and the draft Side Roads Order. These were: -

- The proposed permanent closure of the north bound off slip road at Ewloe Interchange, and
- The proposed permanent closure of the on and off slip roads at the Plough Lane junction.

6.3 In respect of the first point, the Council request me to: -

i) Recommend that the promoter should provide improvements to the A55 Brookside junction (shown in Appendix F of document OBJ/194/3) to an acceptable standard;

ii) Recommend that no new signing is used by the promoter at the A55 Northop interchange to inform road users of the possible alternative route to Ewloe Interchange via the B5125 through Northop Hall;

iii) Recommend that no additional signing is installed by the promoters at the A55 Dobshill interchange with the A550 which would or could encourage traffic to use unsuitable alternative routes through the Ewloe area;

iv) Recommend that positive signing be implemented from the Mold area to Northop and from the A494 Mold bypass;

v) Recommend that subject to the County Council obtaining the relevant Traffic Regulation Order (TRO), the promoting Authority should implement the physical works necessary to prohibit vehicular use of Smithy Lane, as a through route, because of the removal of the slip road at Ewloe.

6.4 In respect of the second point, the Council request me to: -

vi) Recommend that the promoters install yellow box junctions on the Queensferry roundabout at the critical entry points together with enforcement cameras covering these boxed junctions;

vii) Recommend the full installation of traffic signals and enforcement cameras at the Queensferry roundabout;

viii) Recommend that further investigations are undertaken to achieve an engineering solution to the problem caused by the additional traffic which would use the Queensferry roundabout wishing to go to the Asda superstore or to Higher Shotton and Aston;

ix) Recommend the implementation of the offer by the promoters to provide sophisticated traffic management techniques on the existing traffic signal installations on both sides of Queensferry roundabout on the B5129.

6.5 The promoters' responses to these are contained in the letters dated 11 and 12 September 2007, and attached to document OBJ/194/4. These confirmed that: -

i) The works shown on drawing No. 36057-sk-209 (Appendix F of document OBJ/194/3) would be completed before the northbound off slip to the Ewloe Interchange were closed;

ii) The Welsh Assembly Government does not propose to alter any of the direction signs at the A55 Northop Interchange or to encourage any additional traffic to use the B5125 through Northop Hall. The scheme would not cause any additional traffic to use the B5125 through Northop Halt. Direction signing would however be required to advise drivers on the eastbound A55 heading for the St David's Park area to leave at the Brookside Junction;

iii) The Welsh Assembly Government has no plans to alter any direction signs at Dobshill Junction or provide new ones;

iv) The Welsh Assembly Government would agree a consequential signing programme with FCC. The necessary work could be carried out either by the Assembly's own contractor or should the Council prefer to carry out the work themselves the Assembly would reimburse any reasonable costs;

v) There would not be a significant increase in the volume of traffic using Smithy Lane. The Welsh Assembly Government would fund/implement either modest physical works necessary to block the lane to vehicular traffic or the works necessary to implement a one way working system. This work could be carried out either by the Council or by the Welsh Assembly Government contractor. The

Council would be responsible for promoting any necessary TRO and obtaining any permissions or land required;

vi) Installation of yellow box markings at the critical points on the Queensferry roundabout would be included in the works. The need for enforcement cameras is not agreed. There is no evidence to suggest the markings would be abused particularly if the other works agreed with the County Council were successful at keeping the exits from the roundabout clear of traffic;

vii) An underground duct system necessary to facilitate the installation of a traffic signal system at the Queensferry roundabout would be included in the scheme. This would include the necessary cabinet bases; any future installation would only require the installation of the posts and signal equipment. The signals are not needed now but they would be needed in the future. The Welsh Assembly Government would fund their installation as and when they were required;

viii) The scheme proposals as presented offer the most appropriate engineering solution to the problems in this area. All options investigated to date would create more problems than they would solve;

ix) The Welsh Assembly Government has already offered to improve the efficiency of the traffic signals along the B5129 between the Makro lights and Wepre Drive. The work would be carried out as soon as the agreed works to extend the 2 lane (westbound) section of the B5129 up to the B&Q junction were completed. The proposed improvements to the signals are described in Annex A to the letter dated 11 September 2007.

6.6 The County Council accept that, in respect of the provision of cameras in vi), enforcement by the police would be used before there was a need to utilise cameras, and that the promoters would investigate re-positioning of the existing CCTV camera on the off slip-road at the Queensferry interchange. In respect of viii), they also accepted that this investigation could continue following the opening of the scheme.

6.7 In the light of the response of the promoters, the Council withdrew its objection in its letter dated 13 September 2007 (document INQ/11).

Miss S Shenton (objection No. 108)

6.8 When Miss Shenton originally objected to the proposals, the published draft Compulsory Purchase Order contained an anomaly in respect of the shared driveway between her property and that of the adjoining property, No 16 Mountfield Road. The latter would be required to be demolished to allow the scheme to be constructed and had been purchased under a blight notice.

The proposed modification No. 1 to the draft CPO would mean that Miss Shenton's property would no longer be affected by the CPO.

6.9 Miss Shenton objects to the Orders because of the effect that the scheme would have on health and on global warming. The Environmental Statement states that emissions of the main traffic pollutants would rise by up to 41% with the scheme. It predicts increases in the main traffic-generated pollutants, namely nitrogen dioxide ($N0_2$), particulates (PM_{10}) and carbon dioxide ($C0_2$) and indicates that the impact of the proposed scheme on regional air pollution would be moderately adverse. It also states that there would be a minor, beneficial impact on the exposure to air quality in the area. This improvement in local air quality was due primarily to the proposed realignment of the A494, which would reduce the number of residential properties in the band closest to the trunk road where concentrations of NO_2 and PM_{10} are highest.

6.10 This means that there would be a small benefit to the immediate local area because the road would be moved to where there are fewer homes. The minor, beneficial impact (through realignment) of PM_{10} and $N0_2$ would be by less than 2%. This small margin is insignificant and is more likely to be due to an error in the prediction process. Indeed the likelihood of errors in air quality predictions have been noted in the new Air Quality Strategy for England, Scotland, Wales and Northern Ireland produced by The Department for Environment, Food and Rural Affairs (July 2007) (extract at document OBJ/108/2). This states that air quality assessment is a complex procedure with many inputs, assumptions and some less well-characterised parameters and there are complex interactions between the different sources of uncertainty.

6.11 It is this uncertainty that governs the concern for people living close to the proposed new A494 and for the region as a whole.

6.12 The Visual Impact Schedule is very subjective in nature. Many residents feel the construction would be an inescapable eyesore.

6.13 There are concerns for the health of children in the light of the likely increases in PM_{10} and $N0_2$ in the region. Exposure to pollutants from exhaust fumes has been directly linked with childhood asthma, stunted lung growth and cancers. A recent American study known as the Gauderman report proposed that PM_{10} - a pollutant particularly found in diesel fumes - could explain the effects in the study. There has been a dramatic increase in un-roadworthy vehicles (including diesel lorries) using the A494 and the air pollution consequences are very worrying, especially in the likelihood of a future with induced traffic flows. The threat of enhanced PM_{10} exposure is further exacerbated for families living within 100 metres of the site boundary during construction. For at least two years these areas will experience significant increases in PM_{10}. PM_{10} levels taken from the A494 are already exceeding the provisional 2010 objective. Although the proposed A494 is not expected to exceed the existing UK and EU air quality standards it would break the new 2010 objective if this is adopted in 2010.

6.14 The new Air Quality Strategy also makes some worrying statements in regards to PM:

- short-term and long-term exposure is consistently associated with negative health effects;
- there is clearly and unequivocally no recognized safe level for exposure; and
- they cause significant health impacts even in areas where levels are under current standards.

6.15 As a result it is stated that it is more beneficial to public health to reduce PM levels across the whole population of an urban area or region rather than in a small area or 'hot-spot'.

6.16 Given these concerns a Health Impact Assessment (HIA) should be carried out. The consultation carried out in 1992 is now fifteen years out of date. The initial consultation is irrelevant and does not reflect current residents' views in regard to route choice. Over 2,000 objections to this scheme support this view. Although the Public Consultation document made available at the time described the number of lanes no mention of building to motorway standards and speeds was included. There was no mention of junction closures.

6.17 In addition, a failure adequately to maintain the A494, its bridges, subways and the properties bought under blight should not be used as a reason to proceed with this scheme.

6.18 Given the strength of concern and the vast number of objections, it would seem appropriate to reappraise this whole route selection with an up-to-date and relevant consultation where the public have easy access to all the necessary information across many areas and fields of expertise.

Mr M Isherwood AM (objection No. 279)

6.19 Mr Isherwood is an Assembly Member for North Wales. He objects to the Orders on the following grounds: -

6.20 The proposals are proceeding prior to publication of the Wales Transport Strategy Report and take no account of the Wales Transport Strategy.

6.21 Previously, Flintshire County Council engineers would have been actively involved in designing such a project, taking into account local transport issues, on behalf of the Trunk Road Agency. This current project has been directly contracted to a construction company by the Welsh Assembly Government. There is no requirement in the new scheme for the contractor to consider the impact on the local traffic system.

6.22 There is a question about the degree to which human health has been considered within the Environmental Impact Assessment. The Gauderman report, published in the Lancet February 2007 and corroborated by the University of Southampton concluded that there was a growing awareness of health risks for young people living in close proximity to Highways carrying intense traffic of diesel powered vehicles, as would be living or schooling near the proposed A494/A55 road-widening schemes.

6.23 The study draws upon data from the Children's Health Study (CHS), a longitudinal study of respiratory health among children in 12 southern California communities. More than 3,600 children around the age of 10 years were evaluated over a period of eight years, through to high-school graduation. Lung function tests were taken during annual school visits, and the study team determined how far each child lived from freeways and other major roads.

6.24 The report stated that "Otherwise-healthy children who were non-asthmatic and non-smokers also experienced a significant decrease in lung function from traffic pollution," "This suggests that all children, not just susceptible subgroups, are potentially affected by traffic exposure".

6.25 The Health Impact Assessment Development Officer at the Welsh Health Impact Assessment Support Unit to the Associate Director of Public Health and Director of Economic Regeneration states that the Welsh Assembly Government has given a commitment to health impact assessments and this process can be a vital way of considering health and wellbeing within planning. It published the draft Ministerial Interim Planning Policy Statement DMIPPS 02/2006 on `Planning, Health and Wellbeing' with regard to the Planning process at the end of last year. A Health Impact Assessment has not been carried out.

6.26 Public statements have referred to proposals to widen the A494 in Flintshire into a six lane highway. However, there would be 4 lanes up Aston Hill and 3 lanes down, plus 2 hard-shoulders (the same width as the other lanes, for use in emergency etc.). From Queensferry to Ewloe there would be a local road alongside the main carriageway comprising 2 lanes and so for most of the 2 miles the road would be 11 lanes wide, but from the Plough Bridge to Aston Hall Lane there would be another local road consisting of 2 lanes. Making a total of 13 lanes at Aston.

6.27 The removal of the north bound exit slip road at Ewloe/St David's Park Interchanges would generate additional local traffic on other Flintshire roads involving Northop Hall, Mold, Buckley, Ewloe and Hawarden. The removal of the Plough Lane Junction would increase A494 traffic exiting at the Queensferry Interchange. This would have a severe adverse impact on what is already a congestion hotspot, affecting Queensferry, Garden City, Shotton, Connah's 'Quay, Aston Park, Mancot and Sealand. This would place restrictions on access for emergency vehicles.

6.28 The consequential costs of the impact on the County Road Network would fall to Flintshire County Council.

6.29 If the proposals were to take traffic away from the heavily populated area of Deeside, the plans would be acceptable. However to plough through the community with an American Freeway style road, demolishing houses and destroying community life would be a retrograde step. Traffic could instead be diverted away from this residential area, leaving the current road infrastructure capable of handling domestic traffic comfortably.

6.30 Alternative routes should be sought, for example from the Flintshire Bridge to the A55 at Northop over undeveloped land. This could improve and reduce traffic flow between North Wales and the North West which currently uses the A494. It would therefore remove the need for the major Aston Hill works. Part of the funding for the A494 Aston Hill project could then be used to upgrade the A548 between Prestatyn and Flintshire Bridge at the same time.

6.31 The provision of a link road from the A55 to Prestatyn could be another alternative as would the re-labelling of Junction 15 on the M56 to utilise the A55 route around Chester. This would be a better alternative with fewer obstructions for both motorists and HGV drivers travelling into North Wales.

6.32 The current proposals for the A494 scheme should be reviewed.

Mrs S Mewies AM (objection No. 193)

6.33 Mrs Mewies is the Assembly Member for Delyn. She objects to the Orders on the following grounds: -

6.34 The scheme is not embedded in a coherent transport strategy as the possibilities of, for example, improving public transport links including rail seem to have been ignored.

6.35 The proposals would impact on human rights of those people who would be affected by noise and pollution increasing health problems and destroying their home environment.

6.36 The ‘brown route’ proposal, shown as part of the A55 Northop to Ewloe Improvement, that would link the A494/A55 with Northop Hall is a route which serves no purpose but will result in large, extra volumes of traffic passing through Northop Hall on a road which is completely unsuitable for the purpose. This road is widely used by children going to school and by people using village facilities.

6.37 Proposed service links to the Expressway are unnecessary and the loss of amenity in local lanes outweigh other possible benefits which could accrue.

6.38 The proposed scheme is on too large a scale and not enough note has been taken of health risks for those in the local and wider area.

6.39 A modified route should be explored, although alternative routes which would transfer problems of heavy traffic elsewhere, for example, through Flint and Oakenholt are neither feasible nor reasonable.

Mr C Sargeant AM (objection No. 192)

6.40 Mr Sargeant is the Assembly Member for Alyn and Deeside. He objects to the Orders on the grounds that: -

6.41 The 1998 "Driving Wales Forward" strategic review document states that that the Government takes a view that the demand for traffic movement has to be recognised but questions whether all movement must necessarily take place on roads and in private cars. It goes on to say that it believes that it is unrealistic to plan to meet the expected growth in traffic by providing unlimited additional road space, adding that such a policy is neither financially viable nor, more importantly is it socially and environmentally sustainable or desirable. It also states that the Government does not consider that it would be appropriate to take decisions on schemes until a comprehensive study has been carried out to assess the contribution which enhanced public transport can make to alleviating problems identified. The proposers have not established that the bases for the scheme reflect the properly identified and accurately analysed statistical evidence nor that the Environmental Impact Assessment, as it relates to the residents affected by the proposals, is adequate. Nor has it been demonstrated that the EIA is robust enough to incorporate the Health Impact Assessment which the Welsh Assembly Government is so keen to promote through the draft Ministerial Interim Planning Policy Statement.

6.42 Some of the work done for the Queensferry Transportation Study is some ten years old and its relevance to today's scenarios may be questionable.

6.43 The promoters have made no attempt to either improve stakeholder involvement or present the proposals in the wider context so as to show the impact of the proposals on places such as Shotton and Connah's Quay or Ewloe and Broughton.

6.44 The current proposals appear at a time when the Transport Strategy for Wales is due at any time now, i.e. autumn 2007 and the Regional Transport Plan is due to be published in the Spring of 2008. Additionally the Flintshire County Council Unitary Development Plan is due to be published in the summer of 2008 and the latest update of *The Wales Spatial Plan* should be published in the not too distant future. Any or all of these proposals will affect or be affected by what the final outcome of this inquiry is.

6.45 This scheme represents the largest piece of road construction outside of the M25 motorway and appears wholly disproportionate to the size of the traffic

problem. In addition to the trunk road proposals for 3 lanes northbound and 4 lanes southbound, the peripheral local traffic network required to support the trunk road proposals means that for part of the scheme there would be two minor roads either side of the trunk road and from the Plough Lane Bridge to Aston there are an additional two lanes. This would make the whole scheme disproportionate to the scale of the problem the Assembly Government is seeking to resolve.

6.46 The statistical evidence used to identify potential traffic flows and thereby the scale of the proposals is flawed as it shows account being taken of the M56/A5117/A5440 link to the Deeside Industrial Park. This new link coming as it does from the "English Side" is being built partly on the understanding that the Park itself is continuing to expand and will do so for some time to come and the new access will allow for much freer traffic flows to and from the M56. None of this traffic uses the Queensferry to Ewloe stretch of road.

6.47 A projected increase in traffic flows of 26% between 2005 and 2025 does not justify an increase of over 100% in the size of the road network to accommodate it. The hill at Rhuallt on the A55 is steeper and longer than Aston Hill yet it has only three lanes going eastwards and uphill and two lanes going westward and downhill. There is no necessity for the scale of the proposal at Queensferry.

6.48 It is proposed to remove the footbridge that links Aston with the Shotton/Queensferry areas. The reasons put forward are that the bridge cannot be made compliant with the requirements of the Disability Discrimination Act (DDA) and the usage figures could not support the need for a bridge. The fact that the bridge cannot be made DDA compliant is not a valid argument for taking it away. The bridge was put there as a road safety measure as a result of a fatal accident at the site and therefore the amount of use should be of no consequence.

6.49 Increasing the speed limit from 50 miles per hour to 70 miles per hour is at odds with reducing accidents. There are many examples of speed reduction zones across Wales - the speed reduction zone and fixed camera scheme at Neath in South Wales as well as the A55 trunk road through Colwyn Bay having a reduction from 70 mph to 50 mph. If traffic passing the slow moving vehicles were to be allowed to proceed at 70 mph then the risk of accidents would be increased.

6.50 The closure of the Ewloe/St. David's Park Interchange slip road and the Plough Lane junction would increase travel distances for local traffic unless routes are identified by drivers that make use of ordinary streets linking the different housing estates. This would cause chaos as well as creating the potential for serious accidents because of the children playing and cycling on the streets.

6.51 The area between Queensferry and Connah's Quay already suffers with extreme congestion. If traffic were to have to use the Queensferry

roundabout to access Buckley or Higher Shotton then the situation would be exacerbated. This would also have an impact on air pollution levels for local people.

6.52 There would be an adverse visual impact due to the proposed screening works.

6.53 In terms of the scheme and its impact on local people, there is a need to consider Part II of the First Protocol, Article 1 of the Human Rights Act 1998 which states that "Every natural or legal person is entitled to the peaceful enjoyment of his possessions". It is important that the final scheme reflects the fullest consideration of the needs of all parties affected.

Cllr C Ellis (objection No. 146)

6.54 Councillor Ellis represents the Buckley Mountain Ward on Flintshire County Council; it covers an area to the north west of the scheme proposals and borders the Community Ward of Hawarden which is affected by the proposals. As a result of the proposed closure of the St David's Park Interchange northbound off slip road, some traffic is forecast to divert to alternative routes, some of which pass through the Buckley Mountain Ward.

6.55 Councillor Ellis supports the objections made by fellow Councillors and objects to the Orders on the grounds that: -

6.56 The closure of slip roads whilst construction takes place would result in an increase in traffic in Buckley and surrounding areas. Whilst the Assembly Government maintains that most of the traffic is local they are not making provision for traffic that would normally exit at the slip road.

6.57 Traffic would have to travel to Queensferry and exit at the roundabout, then double back and exit at Ewloe roundabout. This is highly unlikely as this journey would involve a detour of approximately five miles. Drivers would find an alternative route using `B' roads around Buckley and the surrounding areas. Buckley already suffers from heavy traffic on roads that were never designed to cope with the amount of traffic already using them. The increase in traffic would be significant.

6.58 At present Flintshire County Council have two planning applications for landfill sites off the A494. If permission were to be granted this will increase the number of Heavy Goods Vehicles (HGVs) considerably. HGVs wanting to access the A494 would use `B' roads such as Pinfold Lane, Alltami Road and Bryn Road. This will have a detrimental effect on residents' experiencing HGVs passing their homes.

6.59 Residents would have their lives blighted by heavy traffic for years and would have to deal with extra noise, pollution, vibration, congestion and additional risk on road safety to drivers and pedestrians. This would have a

detrimental effect on the health and well-being of the residents.

Cllr H Gambino (objection No. 310)

6.60 Councillor Gambino represents the Aston Ward as a Flintshire County and Community Councillor. This covers much of the area through which the proposed scheme passes. As a result of the closure of the St David's Park Interchange northbound off slip and the Plough Lane junction, some traffic is forecast to divert to alternative routes, a number of which would pass through the Aston Ward. She objects to the Orders on the following grounds: -

6.61 The proposed scheme would split the Aston community into two halves. Each side of the 'super highway' would have the feeling of a stand alone community. At its greatest point there would be 13 lanes dividing each part of Aston. This would have a detrimental impact on both the neighbouring sides. Local traffic would have longer journey distances; this would involve residents on the Old Aston side being unable to use their local facilities, including local businesses that are striving to compete with major business. The scheme proposed in 1991 had a smaller impact in respect of housing; approximately 15 houses would be affected compared to the current figure of some 53. It is vitally important not to lose this number of houses in the current economic climate.

6.62 Most traffic on this road already now exceeds the 50 mph speed limit; to increase the speed limit to 70 mph would result in traffic speeding through at least at 90 mph leading to potentially hazardous situations.

6.63 Increased traffic, increased lanes, increased speed limit together with changing of gear going up the gradient would produce higher levels of pollution.

6.64 Alternative routes have not been investigated thoroughly. This should be carried out before any decision on these proposed plans is made.

Cllr G Hardcastle (objection No. 634)

6.65 Councillor Hardcastle represents the Aston Ward of Flintshire County Council. This covers much of the area through which the proposed scheme passes. As a result of the closure of the St David's Park Interchange northbound off slip and the Plough Lane junction, some traffic is forecast to divert to alternative routes, a number of which would pass through the Aston Ward. He objects to the Orders on the grounds that: -

6.66 Plans to re-locate and extend the subway alongside the railway line, which is to be electrified, would prove a health and safety issue. Anti-social behaviour is well known to residents and authorities. A footbridge across the A494 would be preferred.

6.67 Closure of the Plough Junction would create severe grid-locking on any proposed by-road. Residents living alongside the local roads would be unlikely to be able to exit their driveways. The added pollutants from these vehicles would prevent house-holders being able to open windows.

6.68 If the Ewloe Interchange were to be closed, traffic would have to exit at the Brookside Junction at Northop Hall. Any incidents occurring along the B5125 - the old A55 - would create a "rat run" through Northop Hall Village and the B5125 should be upgraded.

6.69 Keeping open the 2 junctions proposed to be closed would benefit residents at Aston Park, Aston Community Hospital, Lower Aston Hall and Higher Shotton getting on to the A494. If they were to be closed, all traffic would use Aston Road towards Queensferry and add to the traffic from Aston Park, Lower Aston Hall Lane and Higher Shotton. Queensferry has always been an area with traffic problems due to vehicles to and from Shotton, Connah's Quay, Mancot, Pentre and Sandycroft. These problems would be exacerbated if the junctions were to be closed.

6.70 The proposal should have fewer lanes.

Cllr P Heesom (objection No. 312)

6.71 Councillor Heesom represents the Mostyn Ward on Flintshire County Council. It is some 15 miles from the area through which the proposed scheme would pass.

6.72 Councillor Heesom supports the cases presented by Councillors Hardcastle, Gambino and Ellis. He also supports the proposal for an alternative corridor using the New Dee Crossing (NDC) and the A548 road. This has been disregarded in the planning and conception of the current proposals. The promoters' evidence appears to be based on a misconception that the extent of the alternative route proposals is predicated on a suggestion for the redirecting of traffic from the A55 to the NDC. The evidence appears to be that new roads will be required to take traffic off the main motorway at the Northop interchange down to the NDC. This would result in unacceptable levels of environments damage.

6.73 If traffic from the Flintshire Deeside Coastal Strip (FDCS) and the extended communities and townships of Denbighshire were to be redirected to the NDC then the amount of overload on the Ewloe section of the motorway has been grossly overestimated. That traffic represents some 25% of the overload on the Ewloe section of the motorway (probably more at peak times). Traffic currently using the A494 Ewloe Interchange would be alleviated if the FDCS and Denbighshire traffic was taken through the NDC route.

6.74 Proposals for Flint bypass on the A548 were abandoned some 30 years ago, however circumstances have changed and a case can be made for the

bypass to be built. Development of the NDC would require trunking of the A548.

6.75 The Welsh Development Agency development at Shotwick Road would add to the traffic problems at the Queensferry Interchange.

6.76 Better management of traffic throughout the region and North Wales and transfer of traffic to the A548 route would alleviate the extent of the proposed works.

Cllr M Warburton (objection No. 1883)

6.77 Councillor Warburton represents the Ewloe Ward on Flintshire County Council and lives adjacent to the previously completed scheme to the north of the River Dee. He objects to the Orders on the grounds that: -

6.78 They would result in having to negotiate a tortuous route when travelling to and from Wirral or Warrington/Manchester, and this would be via a busy junction which is a high risk accident site. Incidents or blockages on the A494 exacerbate the difficulties. Traffic signals would not solve the problem.

6.79 Chevrons Road Bridge was erected as a public service after more than one fatality, and should remain. The proposed alternative via the Queensferry junction would not be acceptable.

6.80 Cllr Warburton objects to the proposed loss of the Aston Hill Link. Lighting along the proposed subway alongside the Wrexham to Bidston railway line would be a hazard to train drivers.

6.81 If some 70% of traffic is local, then there is no need to consider through traffic.

6.82 Cllr Warburton also objects to the proposed removal of the 50 mph speed limit; he also expresses concern about the possible effect on a local school for which he is a Governor.

Cllr E Jones (objection No. 601)

6.83 Mr Jones is a Shotton Town Councillor. He objects to the Orders on the grounds that: -

6.84 The improvement would not provide an extension to the existing safe road crossing from Dee View Road to Clay Hill Lane (the Chevrons Road Bridge). The alternative routes proposed are not as substantially convenient or commodious as the existing crossing. The crossing is a very valuable asset to the communities of Higher Shotton and Shotton East. The proposed

crossing would further isolate these communities from green space created by the Green Barrier[2]. As Clay Hill Lane would become a cul-de-sac, it would be short sighted not to use this as a traffic free route between the communities. A bridge which would comply with the Disability Discrimination Act could be provided at the existing site. Even if this were not possible, it would not prevent the provision of a bridge for other users.

6.85 The alternative route contains a steep ramp at the termination point of footpath No.30 and which is of questionable suitability for disabled access.

6.86 Councillor Jones also objects to the proposed closure of footpath 122 (site plan 1 of the SRO).

Miss N Frost (objection No. 640)

6.87 Miss Frost lives in Queensferry in an area close to the A494 at the northern end on the proposed scheme. She objects to the Orders on the grounds that: -

6.88 The A494 runs through a residential area, the proposed changes to the A494 would completely destroy the communities, with no benefit to the local economy. Although changes do need to be made to the A494, a crawler lane up the hill would suffice. There would be no need for up to eleven lanes.

6.89 There are two existing routes to access the A55 and a further one which could be developed. One via the M56 and A494, the other via the M53. The M53 is a more direct route to the A55. Signing on the M56 at the M53 junction would rectify this. Since the road works have been started at Woodbank temporary signs have been situated on the M56 at junction M53 advising an alternative route to the A55. There appears to have been a noticeable reduction in traffic on the A494 with this sign in place.

6.90 The third route is via the Flintshire Bridge with a link to the A55.

6.91 Once the road works at Woodbank are completed this will ease congestion along the A494.

6.92 Due to the nature of industry around the area it would be a better and safer decision to utilise all routes to the A55 rather than focus on one major route. In the event of a major incident roads are congested and traffic is usually re-directed via other routes. This could result in lengthy closures. With increased traffic coming through Queensferry this would make access for emergency vehicles very slow and difficult.

[2] a local or non - statutory policy designation identifying areas of open land, the character and appearance of which it is important to protect in order to prevent settlements merging and to protect open countryside, where normal planning policies do not provide sufficient protection.

6.93 The proposed closure of the junction at Plough Lane would cause many problems for the surrounding areas. Queensferry is a bottleneck through to Shotton at present. With the junction closed, traffic would have to travel to Queensferry to access the A494, which would in turn increase congestion at Queensferry. This problem would then be left to Flintshire County Council to rectify.

6.94 Putting a yellow box on the Queensferry roundabout to aid the flow of traffic would not solve the problem. More congestion in and around the Queensferry area would have a detrimental effect on the local community.

6.95 The proposed changes to the A494 do not accord with any of the objectives set out in the Assembly Government's objectives for transport as set out in Planning Policy Wales March 2002, Chapter 8 Transport.

6.96 The main rail line runs direct to Holyhead from London. This should be used for transporting freight to Holyhead docks. The River Dee could also be used for transport.

6.97 In the light of the recent flooding to various low lying areas of the UK, any further disruption to local infrastructure would seriously increase the risk of flooding to local areas. Sealand is already reclaimed land and Queensferry and the surrounding areas are already classed as flood risk areas.

6.98 If the speed limit were to be increased to 70 mph, an accident on this stretch of road could cause major damage or fatalities. A high percentage of heavy goods vehicles that are stopped by VOSA are un-roadworthy.

6.99 The noise pollution in this area is already high and there are concerns as to what and how noise barriers would be installed due to the lack of space.

6.100 Landscaping on the adjoining Drome Corner scheme still has not matured and will not provide any noise reduction benefits for some time.

Mr N Howell (objection No. 43)

6.101 Mr Howell is a resident of Ewloe. He objects to the Orders on the grounds that: -

6.102 There are two alternatives which would meet the stated objectives of the scheme of improving the transport capacity on the East West Corridor in North East Wales (*The Wales Spatial Plan*). These are: -

- To route through traffic via the existing A55, M53, M56 network by appropriate signposting both at Northop and on the M56 in Cheshire together with the retention of the speed restriction, policed with safety cameras, on the A494 Aston Hill thus identifying it as a local road; or

- A new road joining the A55 to the A548 Dee Crossing. The minimum straight-line distance between the A548 and A55 is some 3.5 kilometres, compared with the 4.25 kilometres of improvement proposed on the A494. A proper analysis of this should be undertaken.

6.103 A significant proportion of the local traffic might choose to divert onto the new link. Travellers from Mold or Mynydd Isa to Deeside Industrial Estate or Wirral/Merseyside or travellers from further west along the A55 headed to the Deeside Industrial Park, or Sealand Road Commercial Park in Chester would probably take advantage of a link from Northop. These movements currently are obliged to use the Aston Hill and are therefore included in the 74% or so of local movements.

6.104 Any delay caused by this investigation is not a justification for proceeding with the wrong scheme.

6.105 The scheme cost is not justified and should include for, among other things, cost of delays etc., loss in property values, increased maintenance, fuel and pollution costs as well as the cost of the subsequent scheme, the proposed A55/A494 Ewloe Interchange etc., which would be required to rectify shortcomings of the present scheme.

6.106 A previous Inquiry dismissed the A55 to A548 link, together with A494 minor improvements as prohibitively expensive but it is questionable whether that Inquiry took account of the costs of the present and subsequent schemes.

6.107 Mr Howell also objects to the proposed closure of the north-bound exit at the Ewloe and St. David's Park Interchanges. If the aim of the scheme is to improve the traffic flows and 74% of the movements are local, then closure of entry or exit points should only be undertaken after careful consideration. One alternative route for traffic travelling eastbound on the A55 or northbound on the A494 is to go to the next junction northbound, at Queensferry, which would add to the already congested junction, and then return southbound along the A494, thereby adding to the traffic on the A494.

6.108 The number of car-using staff employed in the new office accommodation at St. David's Park has been underestimated in the planning process for the development and this would result in the amount of traffic using the interchange to be underestimated.

6.109 A compelling case for acquisition by Compulsory Purchase Order has not been made by proposers of the scheme in terms of the local public interest; the scheme is contrary to local public interest in either regional, national or European terms.

The Ewloe Green A55 Action Group (objection No. 7)

6.110 Mr Iball lives on the B5127, Liverpool Rd, Buckley; he is the chairman of and speaks on behalf of the Ewloe Green A55 Action Group. This has been formed to represent the views of residents in the area from the Boar's Head, Ewloe to the Red Lion in Liverpool Road, Buckley and comprises 8 residents. The purpose of the group is to preserve the quality of life and peaceful enjoyment of their properties through restricting expansion of the A55/A494 in the area; monitoring the results of any change to the community and promoting the cohesion of community life in the area.

6.111 The group objects to the proposals on the grounds that: -

6.112 The area has already been blighted by the initial construction of the A55/A494. Its construction and operation has caused noise and atmospheric pollution which has to be endured constantly by residents.

6.113 The closure of the north bound off slip at the Ewloe/St David's Park Interchanges would cause an increased number of vehicles to seek an alternative route on to the local service roads and lanes. This closure would result in extra traffic requiring access to the Buckley/Mold area. A percentage of this traffic would use the B5127 Liverpool Rd resulting in some 370 more vehicles per day travelling along this road.

6.114 Document DD36A does not take into account the impact of the emerging Unitary Development Plan for Flintshire. The UDP states that Buckley is a Category A target growth band for urban development. The UDP states that approximately 600 houses could be built. In addition a recent permission allows for some 300 houses to be built in the Lane End area of Buckley. There is therefore the planning need to build about 900 houses in the Buckley area up to the year 2015.

6.115 Most modern households own at least 2 vehicles. There is therefore the potential for an extra 1,800+ vehicles of which a percentage will use the B5127 to access the A55/A494. A moderate percentage of 25% of these vehicles using the B5127 could mean an extra 450 vehicles in addition to the 370 proposed in DD36A. The B5127 Liverpool Rd is already an extremely busy road servicing a Land Fill Site, Industrial Estates, Waste Recycling Units and commercial facilities such as supermarkets. This would be in addition to domestic and commuter traffic. The above increase due to these proposals would only add to the problems.

6.116 During construction there would be lane restrictions and consequent traffic build up on the A55/A494. Any delay/accident on the A55/A494 causes major problems on the local network due to traffic seeking alternative routes around the delays. Daily lane closures and routing would have the same effect of the local roads. Increased traffic on Liverpool Road would also present an additional hazard to Ewloe Green School, both to pupils and parents. The proposals would compromise this local amenity and the health

and safety of all users.

6.117 The present A55/A494 has a negative impact on the community's way of life and general well being. Any proposed expansion would only exacerbate this. The locality would have to endure the resultant increase in noise and pollution brought about by the additional lanes speed limit increase to 70 mph. The increased traffic on the B5127 Liverpool Rd would be a continuing problem for residents.

Mr J Gray (objection No. 313)

6.118 Mr Gray is a local resident living adjacent to the scheme. He objects to the Orders on the grounds that: -

6.119 The scheme would substantially increase levels of road pollution and be damaging to health. The likely pollution which would be generated by increased traffic on the scheme is compared with the emissions from aircraft and cigarettes.

6.120 The US-Environmental Protection Agency indicates that one Boeing 747 aircraft takeoff is equal to the following number of cars driven 3 miles for each pollutant:

- Carbon monoxide = 11.58 cars;
- Hydrocarbons = 136 cars;
- Nitrogen oxides = 24,083 cars;
- Sulphur dioxide = 550,000.5 cars.

6.121 The length approximates to the length of the proposed scheme of some 4.25 kilometres, about 2.66 miles. By 2010, traffic volumes near to the Plough Lane area of Aston Hill would be as high as 75,300 vehicles a day including the 7,100 vehicles per day on the adjacent service road. This would equate to some 6,503,747 aircraft takeoffs per day, and the equivalent of the emission from some 553 aircraft in terms of hydrocarbons per day, some 3 in terms of nitrogen oxides per day and about 0.14 in terms of sulphur dioxides per day.

6.122 The nitrogen oxide emitted by 75,300 cars would equate to 265,846,154 cigarettes being smoked each day.

6.123 The development would be detrimental to the health of the people living in its vicinity. In addition there are two primary schools and one secondary in very close proximity to the proposed scheme and the school children's health would be placed severely at risk.

Mr C Martin (objection No. 46)

6.124 Mr Martin lives on Clay Hill Lane and objects to the draft Side Roads Order on the grounds that : -

6.125 The proposed new footpath 5A on site plan 5 is not necessary, there being an existing footpath which meets Clay Hill Lane within some 50 yards of the proposed footpath. Safety would be a problem for children where the footpath would run adjacent to the proposed ponds. A fence should be built between the pond and the path. Wildlife should not be a prominent feature of the proposed ponds.

6.126 The proposals do not include a noise fence adjacent to Mr Martin's property, whereas one is proposed on the opposite side of the scheme.

6.127 Closure of Clay Hill Lane would result in it being made a cul-de-sac and bring with it problems of fly-tipping and overnight parking. A gate should be provided to prevent this.

Mr D Norris (objection No. 326)

6.128 Mr Norris lives on Old Aston Hill. The rear of his property looks out on to an open area and the A494 trunk road. He objects to the Orders on the grounds that: -

6.129 The scale of the proposal is too large, and would pass through a residential area. It would be contrary to the policy of putting people, and their quality of life, now and in the future, at the centre of decision making as stated in Planning Policy Wales. It would also be contrary to Technical Advice Note 12 in Planning Policy Wales (document DD91) which states that the level of community involvement should be sufficient to allow adequate evaluation of needs and concerns of end users, community and business interests.

6.130 Only some 26% of traffic is said to be through traffic, the remaining 74% or so being local. In attempting to cater for both of these, the requirements of through traffic would be met by closing junctions at the expense of local traffic. Local traffic would have more circuitous routes resulting in additional air pollution, noise pollution, more fuel being used and additional cost of travel for local journeys. This would not be a sustainable solution and would be contrary to Section 2.2.1 "Principles" in Planning Policy Wales which states that the Assembly Government aims to foster sustainable change, in particular making it possible to live with less noise, congestion, and traffic pollution, and improving the quality of life.

6.131 The great majority of homes adjacent to the A494 throughout the scheme would experience an average constant noise level of 60dB to 65dB. 17 homes in Garden City would have this level of sound after the completion of the scheme. The World Health Organisation (WHO) Noise Disturbance

Criteria are:-

- >55dB - Serious Annoyance (Daytime and evening)
- >50dB - Moderate Annoyance (Daytime and evening)
- >45dB - Sleep disturbance

6.132 Promoters have neglected their duty of care for many by planning such a huge road through this significant community. Decibel levels quoted would still be far too high compared with WHO figures. The Organisation states that noise seriously harms human health and interferes with people's daily activities at school, at work, at home and during leisure time. Traffic noise alone is harming today the health of almost every third European.

6.133 Planning Policy Wales also states that noise can affect people's health and that the objective of a policy for noise is to minimise and reduce ambient noise levels to an acceptable standard.

6.134 Traffic noises are influenced by wet road surfaces and the local wind direction. The gradient on Aston Hill also increases traffic noise and there is much police and VOSA evidence of foreign vehicles in un-roadworthy conditions. Many residents are woken by sudden impulses of noise from convoys. People suffer stress of broken sleep patterns. There is the constant intrusion of traffic noise at the property. It interferes with many commonplace tasks and activities.

6.135 The Human Rights Act Protocol I Article 1 gives protection of property - the Government or a public authority cannot restrict what you do with your property. Article 8 gives the right to respect for private and family life and says there should be respect for everyone's private and family life, home and correspondence. It covers the right to life without interference and to develop personality and form friendships and relationships with other people. This imposition of noise from the road would interfere with activity in the rear of the house and in the garden. It would interfere with the peaceful use of property.

6.136 Planning Policy Wales states that great care must be taken to minimise the adverse effects of improvements to existing infrastructure on local communities, where neighbourhood severance should especially be avoided. Routes should make the best use of existing landforms and other landscape features to reduce noise.

6.137 There should be a regional solution to the problem, a 3-route approach involving the A494 Aston Hill, the Flintshire Bridge with a link to the A55 at Northop and use of the A55 Chester southerly by-pass routed from junction 15 on the M56 would have the following advantages: -

- Alternative route A1 would be shorter than the A494 via Aston Hill and there would only be 55 dwellings affected within 500 metres of this route as opposed to more than 4,885 homes within 200 metres on the A494;

- There could be 22% - 26% less traffic on the A494 immediately if a Kelsterton to A55 route were to be opened. There would be less air and noise pollution and no need for the A494 to be widened;

- Junctions on the A494 could remain open for the 74% of local traffic;

- There could be more room to protect local homes adjacent to A494 from traffic noise by means of noise barriers;

- Retention of the speed limit of 50 mph on the A494 giving relief from the present unhealthy, environmental conditions.

Mr P Davies (objection No. 309)

6.138 Mr Davies is a local resident and former police office. He objects to the Orders on the grounds that: -

6.139 As the ‘gateway’ to North Wales from the North of England and as part of the Trans European route to Ireland, the A494 carries large numbers of goods vehicles including petrol tankers and vehicles containing hazardous chemicals. Such vehicles should be routed away from residential areas to reduce the potential for a major incident.

6.140 Accidents involving goods vehicles frequently include displaced loads or jack-knifed trailers both of which can block two or more lanes. The presence of fire tenders, police cars, ambulances, breakdown vehicles and council vehicles would result in the extra lanes proposed being unlikely to improve this situation. An incident on the A494 Aston Hill could still lead to gridlock and major delays.

6.141 Queues build quickly and there is no credible alternative route for diversions. The limiting factors are the lack of alternative bridges over the River Dee and the fact that the route towards Flint through Shotton is restricted due to there only being one railway under bridge through which all traffic has to pass and this has a height restriction of 14'3".

6.142 Recent development has resulted in significant extra vehicle activity on local roads around the communities of Deeside. The proposed scheme would displace more traffic onto local roads where there is already traffic congestion during the working day.

6.143 Only some 8% of Aston Hill traffic is stated to be medium and heavy goods

vehicles. As this is the E22 Trans European route to Ireland this percentage may not reflect the increase in foreign goods transport using the road in the last two years.

6.144 Through traffic, particularly heavy goods and holiday traffic, needs to be separated from local traffic. An alternative route to the Aston Hill is needed and traffic flows into and out of North Wales need balancing across the region. A link should be built from the Flintshire Bridge to the A55 at Northop and the road from Shotwick through to Northop reclassified to make it the major route in and out of North Wales for through traffic. Visitors would enter North Wales over a prestigious bridge, making the border crossing a more memorable experience than the A494 offers.

6.145 Diverting 26% of the traffic on the A494, together with holiday traffic of around 8,000 vehicles per day, and assuming that some 6,000 vehicles per day from the Deeside Park which might exploit a new link from the A55 rather than travel the A494 corridor, would result in the traffic on this corridor being reduced to some 40,000 vehicles per day. This route would involve far less disruption to the region and the new link road could be built on a scale necessary to accommodate slow moving goods vehicles and caravans that cause bunching on the Aston Hill.

6.146 Protocol 1 Article 1 of the Human Rights Act 1998 centres on the qualified right of citizens to peaceful enjoyment of their possessions, which includes home and garden. Mr Davies supports the arguments put forward by the residents of the Aston Hill about noise, air and light pollution. The scale of the current plans is disproportionate to the problem and only introduces unwanted complications to the Deeside region. The number of properties affected by these proposals far exceeds the number that would be affected by the alternative route proposed.

Mr D Mawdsley (objection No. 590)

6.147 Mr Mawdsley is not local to the area of the proposed scheme, but is a regular user of the road. He objects to the Orders on the grounds that: -

6.148 The road does not suffer from congestion; any current problems are caused by the traffic signals at the Shotwick junction, which the proposed scheme would exacerbate. Attitudes to traffic have changed since the Queensferry Transportation Study was carried out in 2000. The outcome of the study is out of date following a European Commission announcement to limit the amount of carbon emissions by cars and proposals for congestion charging and motorway tolls which would have the effect of reducing the number of vehicles on the roads.

6.149 Construction of the scheme would cause major disruption and the scheme would result in increased noise and pollution from the increased speed of traffic. The estimated cost of the scheme is not realistic and is likely to be exceeded in practice.

6.150 No consideration has been given to improving communication by means of public transport. The inadequate rail services between Wrexham and Liverpool, and North Wales to Manchester should be improved; public funds would be better spent on these improvements.

Mr M Farrow (objection No. 465)

6.151 Mr Farrow is a local resident living on Old Aston Hill and objects to the Orders on the grounds that: -

6.152 The proposals are part of a set of small individual schemes each of which could impact on the others. This does not allow for effective consultation.

6.153 The scale of the proposals is out of context for the area, given the extent of the existing traffic problems. The proposed scheme would offer little or no improvement to the quality of lives of all local residents. The capacity proposed of 106,000 vehicles per day is greatly in excess of the predicted peak flows in 2025 of 75,000-87,000 vehicles per day and this does not include the capacity available from the proposed construction of new 2-way collector-distributor roads linked to the local road network.

6.154 Almost all of the proposed 2 way Aston Road to St David's Park Interchange Collector-Distributor Road would be constructed through the middle of land designated by Flintshire County Council on their Unitary Development Plan (UDP) as Green Barrier.

6.155 Flintshire County Council’s Green Barrier policy states that development will only be permitted providing that it would not unacceptably harm the open character and appearance of the Green Barrier and that Green Barriers have been identified to protect major road junctions from development which would be visually intrusive and compromise the appearance of a junction within its rural setting. The policy does not include the construction of roads/road infrastructure within the list of specific uses of land that may be permitted within Green Barriers.

6.156 Presently the A494 is over 100 metres away from most properties on Old Aston Hill. The proposed 2 way collector-distributor road and associated traffic island will be brought within 30 metres of properties. The existing A494 is in a cutting and is not visible from most properties along Old Aston Hill. However, the proposed collector-distributor road would be at or above the natural ground level in the fields and consequently clearly visible.

6.157 The accident data compiled by the promoters for St David's Park Interchange is incomplete, more accidents have actually occurred than suggested. A fatal accident - on 22 March 1999 - has been omitted from the statistics.

6.158 The scheme proposed would increase the points of access on one half of the

St David's Park Interchange to 7 which would result in having the access points too close together for safe negotiation of traffic around the narrow traffic island. With higher traffic volumes forecast to use the interchange by the introduction of new 2 way collector-distributor roads there would be a much higher risk of accidents. Traffic with a final destination other than the St David's Park Interchange would still unnecessarily negotiate the traffic island at the interchange to continue on their journey. Mr Farrow raises a number of detailed matters concerning the layout of the proposed roundabout and states that speed limits should be incorporated on the distributor road.

6.159 The proposals would permit 2-way traffic access to Old Aston Hill which has had limited access following the construction of the previous A494 improvement which bypassed Old Aston Hill. This would result in a high probability that Old Aston Hill will be used an alternative route by vehicles bringing with it the associated risks on this quiet residential road. If access to and from the lower end of Old Aston Hill from the Aston Road to St David's Park Interchange Collector-Distributor Road is deemed necessary, traffic should be limited as at present to northbound traffic only. This action would still permit full access by the Fire Brigade, Police etc. in either direction in an emergency.

6.160 There are no specific formal proposals for earth banks above the finished road surface height along the entire length of the Aston Road to St David's Park Interchange Collector-Distributor Road adjacent to Old Aston Hill. Two metre high earth banks above the finished road surface should be constructed along the entire length of the Aston Road to St David's Park Interchange Collector-Distributor Road whilst adjacent to properties on Old Aston Hill. A 2 metre high solid acoustic fencing should also be provided on top of the proposed earth banking alongside the Aston Road to St David's Park Interchange Collector-Distributor Road for its entire length whilst adjacent to properties on Old Aston Hill.

6.161 All planting should incorporate deciduous and evergreen trees and shrubs of such density to provide full year round screening. If road lighting columns are essential on the Aston Road to St David's Park Interchange Collector-Distributor Road, all lighting columns should be of the lowest height possible to minimise visual intrusion on adjacent properties to ensure all emitted light would be directed away from the properties on Old Aston Hill.

Mrs J Hough (objection No. 1613)

6.162 Mrs J Hough is a local resident living in Moorfield Road, adjacent to the scheme. She objects to the Orders on the grounds that: -

6.163 The proposal would have too many lanes of traffic; it would be too near houses producing air pollution. The change to 2-lanes at the Ewloe Interchange would be hazardous, the additional lanes are unnecessary as are the local distributor roads. The proposal should comprise a dual 2-lane

carriageway plus a climbing lane.

6.164 No health impact assessment has been carried out.

6.165 The proposed increase in speed limit would create additional noise and air pollutants.

6.166 The plans are 15 years old and are out of date.

6.167 Closure of Plough Lane junction and Ewloe Interchange would increase congestion and pollution and make it difficult for residents to access their properties.

6.168 The scheme would impact on schools and on children's health.

6.169 The proposed subway at Aston Mead would be dimly lit and too dangerous for females of any age to use. Walkers would be within 3 metres of fast trains and electric cables. The site of the proposed subway has evidence of alcoholic activities and drug taking.

6.170 Traffic should be routed via the M53 and A55.

6.171 The World Health Organisation has issued a report which says that the incessant roar of traffic can be attributed to a catalogue of health problems, including heart attacks and strokes. Noise pollution causes deafness, disturbs sleep and affects a child's ability to learn. The report goes on to say that until now, noise has been a less important form of pollution, and people haven't been aware that it has an impact on their health. The Department for Environment, Food and Rural Affairs (DEFRA), says that it takes the issue of noise very seriously and is working on a strategy which will go out for public consultation later this year.

6.172 Part II of the First Protocol, Article 1 of the Human Rights Act 1993, states that every natural or legal person is entitled to the peaceful enjoyment of his or her possessions.

Mrs J Williams (objection No. 1122)

6.173 Mrs Williams lives in Ewloe and objects to the Orders on the grounds that: -

6.174 The scheme would have an impact on air pollution. Increasing the A494 to 11 lanes of traffic, 13 in some places, would outweigh any predicted benefits from possible developments in engineering. The proposal would also increase the impact of noise and accidents would increase due to the proposed removal of the 50 mph speed limit.

6.175 Closure of the junctions would lengthen and complicate the shortest of journeys. This would add to the pollution, noise, danger and inconvenience to those who live there. The scheme would be close to houses and would have three schools within 500 metres of it. The Gauderman report identifies the danger to children's health from traffic pollution.

6.176 The road would narrow to two lanes at Ewloe, and would therefore cause congestion there.

6.177 Traffic travelling west bound along the M56 could instead be diverted via the M53 onto the A55 (the Chester Southerly by pass), avoiding the A494 altogether. At the moment, all the traffic is directed via Queensferry.

6.178 The M56 is now being extended to Shotwick; a viable alternative would be to follow the third Dee crossing with the route continuing across the fields to link up with the A55 in the vicinity of Northop.

Mr P Buchanan (objection No. 570)

6.179 Mr P Buchanan is a local business owner, based in 2 offices in St David's Park in Ewloe with premises within 200 metres of the proposed scheme. He objects to the Orders on the grounds that: -

6.180 The scheme would be a waste of public funds. There is no evidence of road congestion on the A494 and there has been no visible change in traffic flow on the surrounding road network since 2000.

6.181 One of the major factors in moving to St. David's Park was its location with a simple and convenient surrounding road network providing proximity and ease of recruiting staff living near to the office in North East Wales in areas such as Buckley and Mold; the North Wales coast; Chester and it's surrounding area; the Wirral and Merseyside, and as far as Warrington and Manchester. The lack of road congestion around St. David's Park was an overwhelming factor in concluding this to be the right area in which to relocate.

6.182 Any problems which do occur are caused by accidents or problems near Shotwick lights with traffic queuing to Queensferry. Aston Hill does create the occasional delay due to a slow moving vehicle; this is usually a minor delay as the vehicle is moving.

6.183 Closing the exit from the North at Ewloe interchange would result in significantly longer journeys for most of the staff.

6.184 There has been a lack of consultation on the implications of this scheme and the proposed adjoining scheme, the preferred route of which was announced during the inquiry.

Mr D Mackie (objection No. 1881) & Mr B Miller (objection No. 614)

6.185 Mr Mackie and Mr Miller both live on Old Aston Hill, Ewloe and object to the Orders on the grounds that: -

6.186 The proposal ignores the sustainable solutions which the Welsh Assembly Government promotes and would fail to improve the quality of life for some of those living close to the proposal. It is therefore directly contrary to the Welsh Assembly Government's National Planning Policies.

6.187 The World Health Organisation guideline limit for PM_{10} pollutants is set at an annual mean of 20 µg/m^3 to be achieved by 2010. The modelled predictions indicate that this limit would be exceeded at 5 sensitive receptors in the 2010 DS situation. When the Environmental Statement was issued the provisional limit for the pollutant PM_{10} in Wales was set at an annual mean of 20 µg/m^3 to be achieved by 2011, the same as the WHO guideline limit. However, in July 2007 that changed and PM_{10} objectives were replaced by an exposure reduction approach based on $PM_{2.5}$[3]. The limit values are now expressed in terms of $PM_{2.5}$; the only option open in this situation is to use the limit values which applied when the ES was prepared, and as shown in DMRB, i.e. 20 µg/m^3 which is still the WHO limit.

6.188 The World Health Organisation Air Quality Guidelines Global update 2005 states that as research has not identified thresholds below which adverse effects do not occur, the guideline values provided cannot fully protect human health. All this points to the need to reduce traffic using this mainly residential corridor and so reduce PM_{10} and $PM_{2.5}$.

6.189 A substantial percentage of traffic, which at present uses the A494 Aston Hill, could be diverted to a new Flintshire bridge route. This would reduce PM pollutants on the A494 Aston Hill. The approach road to this bridge from the English side is a dual carriageway and passes through open countryside with commercial premises to the left. There are 3 roundabouts on this road which would need to be grade separated. A new road from the south side of the bridge connecting with the A55 would also be required.

6.190 Incentives could be introduced to ensure as many drivers as possible divert to the new route; lower speed limits on A494 Aston Hill; changes to the Deeside Industrial Park/A550 junction to take through traffic via the Flintshire bridge and eventually the A494 Aston Hill could be de-trunked. At least 30% of the traffic using the A494 Aston Hill could divert to a Flintshire bridge route, according to the promoters. A reduction of as little as 20% of the traffic on this section of the A494 would bring predicted traffic volumes in 2025 (the design year) to below the level of 71,000, the congestion level for the present two lane road.

[3] Particulate matter of diameter less than 2.5 microns (µm)

6.191 Separating through traffic from local would comply with the policy of reducing the need to use trunk roads and other through routes for short local journeys as set out in Planning Policy Wales. The promoters are in breach of DMRB Volume 5 Section 1 Part 2 TD 37/93 Chapter 4 in that they did not consider the option of the Flintshire Bridge which the public strongly favoured.

6.192 Congestion has been defined by the promoters as when drivers cannot travel at the speed they wish. Congestion can occur on any road because of sudden extra traffic volumes or slow moving vehicles. Congestion has historically been caused on this part of the A494 by problems on other sections of road, either by queues forming from the Woodbank traffic signals, or a slow moving vehicle on the southbound (uphill) section of Aston Hill. Congestion also occurs because of a build up of slow moving traffic from the adjacent A55 entry and A494 exit.

6.193 The Woodbank junction situation will be rectified by the work currently being undertaken by the Highways Agency to improve the section of this route from the end of the M56 to the Welsh border. The problems of slow moving traffic up Aston Hill does not justify the proposed scheme, and the proposed 4 uphill lanes would deliver traffic more quickly to the A55 entry/A494 exit thereby increasing the likelihood of congestion at this point.

6.194 Work on the A494 scheme should be halted until the planned improvements to both these areas have been completed, when a full reassessment of the need for this scheme could be made.

6.195 Advice from the Highways Agency indicates that the guidance in TA 46/97 on the provision of climbing lanes is based on the typical costs of constructing a new road and not for the costs of adding an additional lane to an existing carriageway. However, in determining the extent of any widening proposals then a similar process should be followed whereby all the impacts of adding additional lane(s) are assessed and compared with those of maintaining the status quo (Do-Minimum). A thorough assessment of all the options of lane numbers and collector distributor roads has not been considered for this improvement. A reassessment should have been made after TA 46/97 was issued.

Mr J Maloney (objection No. 1879)

6.196 Mr Maloney is a resident of Aston village. He objects to the Orders on the grounds that: -

6.197 The scheme would have 4 traffic lanes southbound, 3 lanes northbound, two hard shoulders plus a 2-lane local road and would result in an 11 lane motorway being constructed some 20 metres from his property, about 30 metres closer than the existing road and bringing an increase in noise at the property. There would also be an increased risk at the property due to hazardous loads being carried on the road in the event of an accident. It

would bisect the villages of Aston and Ewloe, contrary to the strategic aim of the Welsh Assembly Government of having villages and town centres benefiting from the removal of large volumes of traffic.

6.198 Difficulties would arise from the reduction to two lanes per carriageway at Ewloe.

6.199 Traffic using the A494 travels freely without interruption for the majority of the time, and to increase the width from 4 lanes to 9 lanes with hard shoulders would be excessive and the cost would not be justified.

6.200 The alternative of the Orange route as put forward at the public consultation, or use of the M53 and A55, would be preferable.

6.201 Closure of the Plough Lane junction would cause an increase in traffic on Aston Road and add to the congestion at the Queensferry Interchange. It would also cause increased pollution because of standing traffic.

6.202 The proposed subway which would connect the two parts of Aston village would be in a remote and dangerous location alongside the railway. There is evidence of anti-social behaviour under the existing bridge, which currently only accommodates 4 lanes of traffic. The additional length to accommodate 11 lanes would not be an attractive facility. This is of particular concern in view of the elderly population in the adjoining residential area. The promoters state that the existing subway is unattractive, the proposed alternative would be more so.

6.203 The Aston Hill subway has less usage than the Chevrons Road footbridge, which is proposed to be removed and not replaced. Replacement of the subway would not be justified on the basis of use.

6.204 Some properties which would need to be demolished contain asbestos. This could be hazardous during construction.

Mr E Armstrong-Braun (objection No. 1885)

6.205 Mr Armstrong-Braun is a local resident and a member of Saltney Town Council. He objects to the Side Roads Order and the proposed removal of the Chevrons Road bridge on the grounds that: -

6.206 The removal of the bridge would divide the communities of Aston and Mancot. The alternative route via the Queensferry Interchange would involve an extra distance of some 0.6 kilometres to journeys from Aston Road to the junction of the footpath with Clay Lane. This should be assessed as adverse in accordance with DMRB. For those talking a recreational walk, the return journey would comprise an additional 1.2 kilometres or so and this would be a deterrent to such walkers.

6.207 A full and proper walkers' survey has not been carried out. The bridge is used as part of the County's Health Walks Programme when about 20 walkers cross each Friday; some 7 persons were observed crossing the bridge in a 20 minute period on a Sunday.

6.208 The route over the bridge would be a much safer route, especially if the Aston Lane becomes a Major Distributor Road, when there would be more conflict with vehicles, vehicle pollution and noise.

6.209 It would not be necessary for the bridge to be built higher to accommodate wheelchairs. The Disability Discrimination Act allows for non-disabled access if it means that the public at large using an important facility, but in this case no-one would lose use of the bridge as the existing bridge cannot cater for wheelchairs.

Mrs S Clamp (objection No. 325)

6.210 Mrs Clamp lives on Old Aston Hill. The rear of the property looks out on to an open area and the A494 trunk road. She objects to the Orders on the grounds that: -

6.211 The scale of the proposal is excessive. It would involve an increase in width from 4 lanes to 9 lanes plus hard shoulders and an additional 2-lane local road, and would be located within some 80 metres of the property. It would lead to increased traffic, speed, noise and air pollution.

6.212 Closure of the Plough Lane junction and St David’s Park Interchange would result in additional traffic at the already congested Queensferry Interchange.

6.213 It would not be possible to experience the peaceful enjoyment of home or rear garden due to the excessive noise from traffic, contrary to Article 8 and First Protocol Article 1 of The Human Rights Act 1998.

6.214 The Welsh Assembly Government have not complied with their stated commitment to sustainable development identified in Planning Policy Wales March 2002 Chapter 2, paragraph 2.1.1 which states that the Assembly will promote sustainable development, that is, development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Paragraph 2.1.3 identifies the Assembly Government as promoting sustainable development by placing sustainability at the heart of its decision making process and paragraph 2.2.1 states the very important principle of putting people and their quality of life now and in the future, at the centre of decision making.

6.215 In addition, paragraph 2.3.2 states that Planning Policies and proposals should contribute to the protection, and where possible, the improvement of people's health and well being as a core component of sustainable

development. Consideration of the possible impact of the developments - positive and/or negative - on people's health at an early stage would help to clarify the relevance of health and the extent to which it needs to be taken into account. This is a crucial issue for some 4,885 homes which would be within 200 metres of the project. It concerns health and the future.

6.216 Section 2.4, Priorities for Urban and Rural Areas, paragraph 2.4.1, recognises the strengths of urban communities, which are home to the majority of the population of Wales. The Welsh Assembly Government emphasises that through integrated approaches they will foster sustainable change, in particular making it possible to live with less noise, congestion and traffic pollution, and improving the quality of life. The proposed A494 improvement would contradict these sustainable principles.

6.217 The A494 corridor between Ewloe and Queensferry has been noted since 2003 as an area for concern. Data has been collected by FCC at 29 selected sensitive receptor sites. The data for 2005 shows that 27 out of 29 receptors indicate between 20.0 $\mu g/m^3$ and 21.9 $\mu g/m^3$ levels of PM_{10} pollutant. The data modelling predicts that by 2010 in the Do Minimum scenario, only 3 out of 29 receptors would have between 20.3 - 20.6 $\mu g/m^3$. However, in the Do Something scenario 5 out of 29 show between 20.1-20.3 $\mu g/m^3$. The remaining sensitive receptors range from 18.8 $\mu g/m^3$ to 19.9 $\mu g/m^3$.

6.218 All this is close to the EU Air Quality Criteria and the provisional Wales PM_{10} limit value of 20 $\mu g/m^3$.

6.219 The promoters' evidence indicates that, for dwellings within 200 metres of the proposed road, some 2,392 properties with an improvement in NO_2 levels; some 2,396 properties with a worsening and 17 properties with no change in 2010. There would be some 2,381 properties with an improvement in PM_{10} levels; some 2,407 properties with a worsening and 17 properties with no change in 2010. Some 50% of the population would therefore be adversely affected.

6.220 By 2025 the emissions with the proposed scheme would be: -

- CO (Carbon Monoxide) 1.4% higher than 2005
- THC (Total hydrocarbons) 4.3% lower than 2005
- NO_x (Nitrogen oxides) 29% lower than 2005
- PM_{10} (Particulate Matters) 24% lower than 2005
- CO_2 (Carbon dioxide) 48% higher than 2005

6.221 No comparison has been given by the promoters for 2025 emissions without the scheme.

6.222 The A494 without the scheme would not be as detrimental to health as with the scheme. In the 2025 do minimum case the changes in pollutants would be: -

- CO (Carbon Monoxide) 6.2% higher than 2005
- THC (Total Hydrocarbons) 7.2% higher than 2005
- NO_x (Nitrogen Oxides) 39.5% lower than 2005
- PM_{10} (Particulate Matters) 46% lower than 2005
- CO_2 (Carbon Dioxide) 28.6% higher than 2005

6.223 These show that in a Do Minimum scenario for 2025, with the exception of CO and THC, the predicted emissions would be considerably lower than the Do Something prediction.

6.224 Much, if not most, of the toxicity associated the inhalation of particles resides in the ultra fine particle (UFP) fraction. However this is the portion of the spectrum of particle emissions which is widely acknowledged to be the most difficult to control and suppress. The range of conditions associated with exposure to particles range from chronic damage to the lungs and endothelial lining of the blood vessels (which is expressed by increased risk of heart attacks and strokes) to acute on chronic effects precipitating respiratory and/or cardiovascular episodes in the vulnerable proportion of the population.

6.225 It is widely accepted that particle inhalation damages health. It is also accepted that there is no safe threshold of exposure (The Air Quality Strategy for England, Scotland, Wales and Northern Ireland) and that the smaller fractions of the size distribution of particulate aerosols undergo translocation over long distances and easily enter buildings.

6.226 The increased traffic volume and increased speeds envisaged would cause a rise in ultra fine particle emissions in the locality as a direct result of the project. This would inevitably have adverse health effects on receptors in the region. The most vulnerable, i.e. children and the elderly, would be more adversely affected than the general population.

6.227 The proposed increase in the speed limit and volume of traffic would lead to an increase in the level of pollutants.

Mr J Butler (objection No. 310)

6.228 Mr Butler is a local resident who lives adjacent to the proposed scheme. He objects to the Orders on the grounds that: -

6.229 The promoters have failed to adequately consult with North Wales Police/Vehicle & Operator Service Agency (VOSA) and incorporate their views in the documents that they have submitted to support this scheme. These agencies have fundamental relevance to all aspects of security, safety and operational effectiveness of the proposed new roads and should have been consulted at every stage. The proposals for the scheme are deficient and misleading in respect of security and safety.

6.230 The proposals are just one component of an extensive linked chain. The scheme is part of a programme of successive, similar scale schemes that are either recently completed, in process of construction or in the process of planning. The whole route is claimed to be of strategic importance to the North Wales economy. Every component of this highway should be appraised by the police to ensure that the whole is as safe, secure and operationally efficient as possible.

6.231 The numbers of foreign vehicles on the A494/A55 has grown dramatically since the expansion of the EU. Since 2001, the EU has expanded to include more distant countries. These vehicles travel in convoy, often during hours of darkness, to and from the Port of Holyhead. There has been much local concern about the visible exhaust pollution, exceptional noise and vibration from defective exhausts and running gear. These vehicles frequently stray off the A494/A55 trunk road onto local minor roads where they cause obstruction, delays and danger to other road users. An assessment of the additional risks with an input from the Police/VOSA should have been effected and made a part of the current scheme documentation.

6.232 There is no justification to raise the limit above 50 mph on a road that passes through or is alongside a built-up residential area. There is an example where the A55 dual carriageway passes through the built up area around the town of Colwyn Bay and where a 50 mph limit has for many years been an accepted and well-observed constraint. There is no evidence that speed has been discussed with the Police. Nor is there any evidence that the risk for increased serious crime has been appraised.

6.233 VOSA has not been consulted in respect of safety assessments or operational concerns for HGV users of the A494/A55 roads near the site.

6.234 The potential for impact on human health has not been comprehensively assessed and reported upon by way of an explicit Health Impact Assessment ("HIA') procedure. Green Lane (Primary) and Penarlag (Junior) schools are in close proximity to the highways that would be widened by this scheme. The increased noise and air pollution that would result from the extra traffic, especially Heavy Goods Vehicles that might be attracted to

a much-widened highway, would have serious adverse consequences for the health of young people attending schools that are close to the roadways of this, or any similar road schemes that would connect with this scheme.

6.235 There are a number of enterprises locally which will combine with road traffic-derived pollution and which will further degrade local ambient air quality. These are in locations where large numbers of people are present for work, leisure or worship. Should the volume of traffic be allowed to double, as is planned for by the promoters, there is a likelihood that commercial locations such as these and all the schools, play areas, retirement and sheltered housing and Community Hospital close to the widened highway, would be subject to yet more traffic-derived air pollution.

6.236 A formal Health Impact Assessment ("HIA") should have been an integral part of these proposals at all stages of the planning and appraisal process.

6.237 In 26th report by the Royal Commission on Environment Pollution entitled, "The Urban Environment" the Department of Health supported the inclusion of HIAs (Health Impact Assessments) within the EIA (Environmental Impact Assessment) process as the best means of considering health issues in the planning process. It recommended that Health Impact Assessments be incorporated explicitly in Sustainability Appraisals, Strategic Environmental Assessments and Environmental Impact Assessments.

6.238 The promoters of this scheme have failed to give proper account of its potential to impact on human health, and the implications of the scheme have been understated.

Mrs S Bunnell (objection No. 775)

6.239 Mrs Bunnell is a local resident and lives adjacent to the proposed scheme. She objects to the Orders on the grounds that: -

6.240 This stretch of road is not always very busy. The peak times are busy when traffic is moving north in the morning rush hour and during bank holidays, or a vehicle breakdown takes place on the Aston Hill. The problem could be solved by adding just a crawler lane for heavy vehicles moving up the hill towards Ewloe.

6.241 Closure of the junctions would add distance to local journeys and add to the congestion problems at Queensferry Interchange.

6.242 A link road from the Flintshire Bridge and/or a link from the A548 near Chester to the A55 at Broughton involving an improved crossing at Saltney Ferry (alternative route E) together with better rail links would relieve the amount of traffic on the A494 and the widening of the A494 would then not be necessary. The alternative route via the M53 should be better signed.

6.243 The proposal would cause pollution and increased noise levels.

6.244 The proposed subway at Aston would be long and would deter people from using it.

6.245 The road is out of scale and the money would be put to better use on other things.

Mr & Mrs A Ellis (objection No. 968)

6.246 Mr and Mrs Ellis live in Riverside Park which is situated approximately 500 metres north of the limit of the proposed works. It is alongside the section of the A494 improved under the recently completed Deeside Park to Drome Corner scheme. They object to the Orders on the grounds that: -

6.247 Development of the road from the relatively new Flintshire Bridge by connecting the road to the A55 would provide a more direct route in and out of England for HGVs travelling to and from the Holyhead Ferries.

6.248 Residents in Riverside Park are experiencing worsened levels of noise and often cannot sleep properly due to the roar of traffic at night, mainly HGVs travelling in convoy at high speeds. Noise barriers and noise reducing surfaces have, in practice, proved ineffective. This is likely to be mirrored by residents living close to the proposed scheme.

6.249 The scheme would result in further increases in noise and air pollution at Riverside Park.

6.250 Removal of the 50 mph limit would increase traffic volume, noise, air pollution, and the likelihood of accidents. This section of the road should remain at 50 mph, and this should be enforced.

Mr T Sleeman (objection No. 1878)

6.251 Mr Sleeman is a local resident and objects to the Orders on the grounds that: -

6.252 There are a series of inter-connected scheme proposed along the A494/A55 corridor; these should be presented on one easy to understand drawing, to a consistent scale. The leaflet for the adjoining scheme contained no reference to the currently proposed scheme, nor does the Environmental Statement - Non Technical Summary December 2006 Revision (document DD22) for the proposed scheme contain any graphic representation or reference to the various other schemes that link to it.

6.253 Sensitive buildings with a significant and potentially vulnerable population are not properly identified on the extensive fold-out linear drawing, number

36057/NTS1 in the Non Technical Summary. This is likely to understate the true impact of the proposals.

6.254 Proper representative consultation has not taken place and a large percentage of the population are unaware of its possible construction taking place in the near future and the impact it is likely to have on the local population.

6.255 A short connection from the Flintshire Bridge to the A55 near Northop could accommodate all through traffic along the corridor and would remove almost completely the need for such extensive additions to the road at Aston Hill and beyond. Suitable signing would also take a significant amount of this through traffic along the M53 route. Any of these options would cause disruption to a much smaller section of the public and would remove many of the hazards due to noise, fumes, vibration etc. from an extensively built up area to a rural area of little habitation, and this would inevitably make the environment much healthier for future generations.

Mrs D Butler (objection No. 1882)

6.256 Mrs Butler is a local resident who lives adjacent to the proposed scheme. She objects to the Orders on the grounds that: -

6.257 The existing A494/A55 highway of the proposed route of the improvement carries a very high volume of heavy goods traffic. The percentage composition, disruption and hazards caused by these vehicles have been greatly understated, especially at weekends. Any conclusions in regard to pollutants and congestion are therefore unreliable.

6.258 The proposals, which include removal of the speed limit of 50 mph, would result in a motorway cutting through a residential district.

6.259 The traffic data is out of date and the forecasts do not address the urgent need in respect of sustainability and climate change. Nor do they take account of life-style changes being made at a time when everyone is aware of the effects of global-warming. The scheme would cause a significant and unacceptable increase in CO_2 levels. There is a very high proportion of HGV traffic bound to and from Holyhead in the western part of North Wales. A great number seem to be foreign registered, there are special problems and risks associated with these which have not been properly addressed.

6.260 Consideration should be given to shifting bulk freight onto railways.

6.261 The route for the adjoining scheme has now been decided upon by the current minister at the Assembly responsible for transport matters. This is most insensitive at the current time. The next scheme is an obvious continuation of the above and will have significant consequences. There has been no recognition of commonality or 'joined-up" thinking. The

consultation process, upon which much of the determinants of the present scheme have been decided, is flawed. The views of any local non-governmental or private business or social interest have not been sought or taken into account.

Mr B Perrett (objection No. 1884)

6.262 Mr Perrett is a local resident, and objects to the Orders on the grounds that: -

6.263 The air quality assessment relies on new technologies for improvements in vehicle emissions; however these may perform worse than the old technologies. Particulate matter may regenerate from particle filters as vehicle engines run at high load and temperatures when ascending the hill, causing increased pollution. Alternative fuels may not offer reduced emissions. Paragraph 5.3.2 of document DD38 notes that total emissions could increase by some 41% in 2025, primarily due to increased speeds. This is a good case for retaining the existing speed limit.

6.264 Table 5 of document DD36 shows the Plough Lane junction to be the safest of the junctions, no accidents have been recorded in the last 3 years; there is therefore no case for closing this junction.

6.265 It is not clear that increased journey times, operating costs and increased accidents in respect of local trips which would have extra travelling to access the A494 have been taken into account. Nor has the reduction in value of housing stock.

6.266 COBA does not differentiate between accidents at 50 mph and 70 mph. This is not born out in practice and suggests that COBA is a blunt tool.

6.267 Closure of the junctions would only result in a slight reduction in accidents even though the existing layouts do not comply with current standards.

6.268 Some motorways have lower speed limits than 70 mph to improve traffic flow at peak times; this would be an alternative to the current proposals.

6.269 If alternative routes were developed to remove through traffic, the existing road layout would cater for the residual local traffic, amounting to some 74% of the total flow on the A494.

Mr I Frost (objection No. 560)

6.270 Mr Frost is a local resident who owns property adjacent to the scheme. He objects to the Orders on the grounds that: -

6.271 It is not necessary to spend this amount of money and upset communities

for some 22% of through traffic.

6.272 The scheme would include a local road which would be busy and which would be close to existing houses.

6.273 The existing Queensferry Interchange has insufficient capacity. The scheme would result in increased traffic at this junction. Plough Lane junction could be improved instead.

6.274 The improvement should comprise the addition of a third lane on the southbound carriageway only, and without hard shoulders.

6.275 An alternative route via the Flintshire Bridge should be considered.

6.276 Removal of the speed limit would increase the speed of HGVs on the northbound carriageway; many of these vehicles are unsafe.

Mrs M Frost (objection No. 584)

6.277 Mrs Frost is a local resident who owns property adjacent to the scheme. She objects to the Orders on the grounds that: -

6.278 The improvements currently being carried out at Woodbank will remove the signal controlled junction which is the cause of congestion at Aston Hill. A link road from the Flintshire Bridge to the A55 would relieve the A494 of some 22% of traffic, and a single southbound overtaking lane on Aston Hill would then be adequate. There would be less demolition needed as a result.

6.279 The proposed parallel service roads would result in additional pollution, noise and congestion.

6.280 The existing speed limit and the junctions that serve the Deeside Community Hospital should be retained.

6.281 The average number of HGVs using the A494 in 2005 was some 570 per day. A large number of these vehicles use the overnight ferries and use the A494 during the night. The proposal to increase the speed limit would affect large numbers of residents due to the noise increase. If these vehicles were diverted to an alternative route, either the Flintshire Bridge or the A55 Chester bypass, the risk of a major disaster near to homes would be removed.

Mrs C Gilogly (objection No. 40)

6.282 Mrs C Gilogly is a local resident and objects to the Orders on the grounds that: -

6.283 A motorway style road structure in Queensferry is totally unacceptable and unnecessary in what is essentially a village community. It is neither needed nor wanted. It would cause disruption to the local area and loss of housing amenity for Queensferry and Aston Hill as far as Ewloe. The scheme would be completely at odds with the Planning Policy for Wales issued in March 2002, for example to reduce the need to use trunk roads and other through routes for local journeys.

6.284 An alternative route via the Flintshire Bridge should be adopted. The A494/A55 trunk road is adequate as a tourist route but would represent considerable disruption and inconvenience to residents in Queensferry and surrounding areas if upgraded to motorway status. It should not be used as a regular route for heavy vehicular traffic.

6.285 Congestion would only move to Ewloe.

6.286 In the light of the recent flooding to various low lying areas of the UK, any further disruption to local infrastructure would seriously increase this risk to local areas; Sealand in particular (already reclaimed land) as well as Queensferry and the surrounding districts.

6.287 Public transport in the area is inadequate.

Mr & Mrs J Henderson (objection No. 595)

6.288 Mr and Mrs Henderson are local residents and object to the Orders on the grounds that: -

6.289 Walking would be made more difficult because of the proposed alterations to local roads and footpaths.

6.290 Existing noise at the property both disturbs sleep and impacts on the enjoyment of the garden, infringing their human rights.

6.291 The scheme would encourage additional traffic to the area resulting in more foreign lorries using the area to reach Holyhead.

6.292 Changing the speed limit would cause more noise, already affecting the Carlines Estate and Penarlag School, and increased pollution which would affect children who live and attend the various schools in the area. Disturbed sleep can aggravate stress levels and affect health.

6.293 Closure of the Plough Lane junction and the slip road at the St David's Park Interchange would increase traffic at the Queensferry Interchange, causing inconvenience to ambulances and patients at the Deeside Hospital. The closures would result in additional mileage and time for journeys. Alternatives, such as the M56/A55 or the Flintshire Bridge could be used to bypass the A494 route through Aston.

6.294 The scale of the development is inappropriate and would infringe people's rights to live in peace and breathe clean air.

Written objections

The material points are: -

6.295 A number of the written objections were made on 8 standard letters. These are at document INQ/13. The issues raised in these relate to the proposals not being in the public interest, inadequate landscaping, likely increase in noise and pollution and encouragement of development and more traffic. Support is expressed for alternative routes via the Flintshire Bridge, and retention of the existing speed limit. Objections are also made to the likely loss of green space and to the proposal for a subway at Aston.

6.296 Other circular letters support the objections on the grounds of the scale and effect of the proposals and the proposed closure of the Plough Lane junction.

6.297 Individual written objections raise similar issues, and no substantial matters that are not already covered by those who appeared at the inquiry.

6.298 Mr M Tami, Member of Parliament for Alyn and Deeside, supports the proposals for an alternative route via the Flintshire Bridge, and requests that a Health Impact Assessment is carried out.

6.299 Mr B Williams, Assembly Member for North Wales, objects on the grounds that the scheme is inappropriate for North Wales and of the impact that the scheme would have on local residents at Aston Hill and Ewloe. He supports an alternative route via the Flintshire Bridge.

6.300 Hawarden Community Council objects on the grounds that a more modest scale of improvement would cater for the predicted traffic volumes. It objects on a number of detailed points in relation to the impact that proposed changes to the local road network would have.

6.301 Queensferry Council objects on the grounds of the impact that traffic exiting the A55 to the A494 would have to travel to the Queensferry roundabout and return via the A494 to access the St David's Park Interchange, exacerbating the existing congestion. It also objects to the proposed closure of the Plough Lane junction and the impact this would have on the local road network.

Written representations

The material points are: -

6.302 Ms J Ryder, Assembly Member for North Wales expresses concern that a Health Impact Assessment has not been carried out.

6.303 Mrs E Burnham, Assembly Member for North Wales, objects on the grounds that the proposals are being considered prior to the publication of the Wales Transport Strategy, and that there is no obligation on the promoter's contractor to consider the likely impact on the local road network. Improvements to the rail network will result in a shift of freight transport to rail. The scheme would have health implications for the local population.

6.304 The Clwyd-Powys Archaeological Trust requests a watching brief during the initial site preparation.

6.305 Airbus UK requests that consideration be given to raising the proposed bridge to increase the navigable windows available to accommodate the expanding operations.

6.306 The Countryside Council for Wales confirms that it has no objection to the proposals, but raises concerns about detailed components in the Environmental Statement relating to the hydrodynamic modelling and requesting details of the ecological surveys used in the Statement.

6.307 The Environment Agency Wales sets out a number of detailed matters which would need to be considered in the preparation of the scheme should the Orders be made.

6.308 The Vehicle and Operator Services Agency (VOSA) expresses concern about the likely impact on the enforcement site at Ewloe.

6.309 Other comments relate to the proposed closure of the slip road at the St David's interchange, the proposed removal of the 50 mph speed limit and concern about disruption during construction.

7 THE CASE FOR THE COUNTER OBJECTORS

The material points are:

Connah's Quay Town Council

7.1 Connah's Quay Town Council object to the proposed alternative routes proposed from the A548 to the A55 as a relief to the A494 unless assurances could be given that the B5129 would not become the relief road

in the event of the bridge crossing being closed. The town already suffers from local traffic congestion and this is added to when the Flintshire Bridge is closed due to inclement weather. In addition part of the area covered by the alternatives is being investigated as a much needed new cemetery for the town.

7.2 The proposed routes would be located in prime agricultural land designated as Green Barrier, and would be detrimental to the landscape. There are badger setts in the area through which some of the routes would pass.

Mr E Armstrong-Braun

7.3 Mr Armstrong-Braun objects to the proposed alternative routes on the grounds that: -

7.4 Any of the proposed routes would cause fragmentation of the natural habitat.

7.5 Using the Flintshire Bridge would include negotiating three roundabouts which are at times congested, and traffic speeds would be slower than on the A494 route. The stop-start nature of these movements would increase pollution and noise and development of the routes would increase light pollution.

7.6 Little traffic would divert to these routes.

7.7 The routes would open up development opportunities which would be difficult to resist. A better alternative would be to develop a route around Flint from the A548 to an improved A5119 to the A55.

7.8 The proposals for alternatives would have a serious impact on rights of way in the area.

7.9 The Flintshire Bridge has to be closed at times of high winds.

7.10 The area has been subject to mining and would need extensive surveying to establish the feasibility.

Written counter-objections

The material points are: -

7.11 The objections are largely concerned with the likely impact on the environment and wildlife species, on the Green Barrier and the likely traffic impact on local roads, and including additional noise impact.

8 REBUTTAL BY THE WELSH ASSEMBLY GOVERNMENT

The material points are: -

Miss S Shenton (objection No. 108)

8.1 The ES states what effect the proposed scheme would have on emissions from vehicles on the project road, within the Regional Assessment in Volume 2 Part 1 paragraph 4.3.17. Forecast emissions in kilograms/year or tonnes/year are given, together with a percentage change comparison between the Do Minimum and Do Something scenarios. The percentage change shows the likely change in quantity emitted, not the change in air quality or in concentration within the atmosphere of the region. Table 1.18 of this part of the ES shows the predicted emissions from this section of road in the context of emissions from the whole of Flintshire, and states that the difference between the Do Minimum and Do Something situations is no more than 0.2% of the county emissions in any of the cases examined.

8.2 The air quality modelling process set out in the ES has been applied equally to the baseline, Do Minimum and Do Something assessments. The baseline assessment used monitoring results from FCC to validate and adjust the model. The margin of error within the modelling process itself is therefore equally applicable to Do Minimum and Do Something assessments and so the changes due to the proposed scheme are considered a fair prediction of the future outcome. The ES clearly states in paragraph 2.2.6 and paragraphs 2.4.1 – 2.4.8 of Volume 2 Part 1 that a 'worst-case' result is reported. Para 2.4.8 shows that emissions in the Do Something situations are likely to be over-estimated and so the assessment of the scheme is likely to be pessimistic.

8.3 All the changes predicted in the Localised Assessment and Generalised Assessment would be relatively small. This is consistent with the relatively small differences in traffic predicted for the Do Minimum and Do Something situations.

8.4 The Visual Impact Schedule records the impact of the predicted changes in visibility of the road and associated traffic and infrastructure, according to criteria set down in the Environmental Statement Volume 2 Part 4 paragraphs 2.4.2 – 2.4.3. Many properties and viewpoints currently have a view of the existing A494, against which the view of the proposed road has been compared.

8.5 There is currently no statutory or procedural requirement to carry out a Health Impact Assessment for highway schemes in Wales. The Environmental Impact Assessment, which is a statutory requirement under the Highways (Assessment of Environmental Effects) Regulations 1999 and Directive 85/337/EC, as amended by Directive 97/11/EC, covers many factors relating to a highway scheme which could have an impact on health,

in a way which is structured, systematic and tested. The findings of this assessment are presented fully in the Environmental Statement which has been published alongside draft Orders under the Highways Act 1980 for scrutiny by the public and by statutory and non-statutory bodies.

8.6 The proposals and EIA were described at two public exhibitions held in July 2006 and January 2007. In addition, a Public Liaison Officer has been located at the Project Offices in Queensferry and has maintained communication with local residents, many of whom have expressed their views as to how they feel they will be affected by the proposed scheme.

8.7 The study published by Gauderman does not provide evidence that the proposed A494 Drome Corner to Ewloe Improvement scheme would have a detrimental effect on health. The reasons for this conclusion are:

a) that the air quality conditions experienced by the individuals in the study are significantly more polluted than those currently experienced or predicted alongside the project road;

b) that the Gauderman study did not demonstrate an association between concentrations of pollutants and lung development;

c) that the freeways studied in the Gauderman report carry traffic flows greatly exceeding those predicted on the A494.

8.8 The Vehicle and Operator Services Agency (VOSA) is responsible for ensuring the compliance of operators and drivers with road traffic legislation. VOSA has confirmed that the records for un-roadworthy vehicles include any which failed emissions tests but that no separate data is held. It is not therefore possible to state whether the number of vehicles exceeding permitted standards has changed. Although the number of prohibition notices issued has increased from 2005 – 6 to 2006 – 7, so has the number of checks carried out. The proportion issued with notices fell from 30% to 22% over the period. The Welsh Assembly Government has relied on air quality modelling carried out as described in the ES.

8.9 A detailed response on the relevance of the Gauderman report to the proposed A494 Drome Corner to Ewloe Improvement scheme is presented in Annex 4 of document WAG/REB/108/1.

8.10 There is no conclusive evidence that exposure to pollutants has been directly linked with the onset of childhood asthma, although there is some evidence which suggests it exacerbates a pre-existing condition. The UK air quality objectives have been set at levels chosen to protect the health of the most vulnerable members of society. The UK Air Quality Strategy 2007 also states that ‘This strategy is based on standards from expert recommendations representing levels at which no significant health effects would be expected in the population as a whole’.

8.11 The Environmental Statement provides quantitative data of the effects of the proposed scheme on the environmental factors noted above or, where quantitative measures are not possible, it provides qualitative assessments of those effects. In the case of noise, air quality and water quality the assessment uses nationally agreed standards, guidelines and methods such as those in the DMRB against which the predicted effects are judged. None of the predicted effects would lead to environmental conditions exceeding guidelines set to protect human health, and in many cases the proposed scheme would result in conditions better or no worse than those that would apply in the absence of the scheme.

8.12 The Assembly Government have consulted widely during the preparation of this scheme.

8.13 During 1992, the public were invited to express their views on the proposals to improve the A494 between the River Dee and St David's Interchange. Following consideration of all the submissions made to him, the then Secretary of State for Wales decided that the Blue Route (on-line widening) should be adopted as the Preferred Route.

8.14 There have been two recent Public Exhibitions (July 2006 and January 2007), both preceded by presentations to elected members of the Community, Town and County Councils together with Assembly Members. At these exhibitions the details of the scheme were presented and the public have had the opportunity to discuss issues with members of the Project Team. Where appropriate, comments from the July 2006 exhibition have been incorporated into the draft Orders published in December 2006.

8.15 Additionally on this scheme, a Project Office was established in Queensferry to allow the public access to detailed information and personnel. A Liaison Officer has been available at this office for the majority of the time since August 2005. The scheme has also been widely publicised by newsletter and in the press.

Mr M Isherwood AM (objection No. 279)

Additional points are: -

8.16 The Wales Transport Strategy (WTS) is a high level document which sets out the cross cutting outcomes that the Welsh Assembly Government seeks to achieve. It does not discuss individual schemes, although one of its main aims is to support *The Wales Spatial Plan* which emphasises the need for capacity enhancements on the east-west corridor in north east Wales. This accords with the current Transport Framework for Wales and Trunk Road Forward Programme, which means the proposed improvement to the A494 is broadly in line with current policy.

8.17 It is planned to publish the final version of the Strategy later this autumn. The new Government is considering comments which have been made on

the draft strategy and to make sure that it reflects the priorities in 'One Wales'. Although it has not yet been published it is unlikely to produce changes in travel patterns or car usage in sufficient time to avoid the need to carry out this scheme.

8.18 The proposed scheme has been designed in accordance with the procedures and policies laid down by the Welsh Assembly Government. The majority of traffic on the A494 in this area has a local origin or destination and the trunk road itself is a key element of the local transport system. This is recognised in the Flintshire County Council UDP which has protected the corridor of the preferred route.

8.19 During the development of the design Flintshire CC has been involved in technical meetings and has been involved with and contributed to the design. There have also been a number of meetings with senior officers of the Council to discuss the more sensitive elements. Where the scheme would directly impinge on the county road system there has been considerable discussion with FCC on what measures may be suitable to provide improvements to the county network.

8.20 The proposed scheme has been fully described in all published reports and on drawings displayed at the two public exhibitions. The number of lanes at each part of the proposed trunk road and on the side roads has been stated and shown. From the River Dee to the Queensferry Interchange the scheme would have 4 lanes northbound and southbound plus hard shoulders. Between the Queensferry Interchange and the St David's Park Interchange there would be 3 lanes plus a climbing lane plus a hard shoulder southbound with 3 lanes plus a hard shoulder northbound. Between the Plough Inn and St David's Park Interchange there would also be a new 2 lane distributor road to the northwest of the main carriageway to facilitate local access. This was added following public comment prior to the July 2006 exhibition. Between the Plough Lane Bridge and Lower Aston Hall Lane to the southeast of the main carriageway there would be a two lane access road to replace the existing two lane access road which would be covered by the new construction.

8.21 The proposed hard shoulders would not be the same width as other lanes. They would be 3.3m wide rather than the standard lane width of 3.65m.

8.22 It would not be possible to safely accommodate a northbound off slip to the St David's Park Interchange as part of the current scheme due to the proximity of the A55 Ewloe Interchange and the lack of adequate weaving lengths as demonstrated in document DD35 paragraph 5.4.16. However, a replacement for this facility is proposed as part of the next phase in the improvement programme. Following the 2006 public consultation a connector road has been added to the proposed scheme to deal with traffic from the A55 Chester Southerly Bypass, which accounts for around 46% of the vehicles using the existing slip road. This would deal with concerns about the potential for traffic diverting through Tinkersdale and through Hawarden village.

8.23 Traffic from the A55 from Conwy constitutes about 36% of the vehicles using the existing slip road. Traffic modelling forecasts that the majority of these would leave at the Brookside junction and use the original trunk road and Stamford Way. Some work to improve the A55 Brookside junction would be required and has been agreed with FCC.

8.24 Traffic from the A494 Mold constitutes the remaining 18% or so of the vehicles using the existing slip road. Traffic modelling forecasts that these vehicles would divert through Northop or Buckley or continue to Queensferry and return via the southbound carriageway of the A494. The forecast increases in traffic flow on the alternative local routes would be a maximum of +3% as detailed in the Table in paragraph 6.11 of document DD36A. These changes are not considered to be significant. It is not forecast that there would be any significant additional traffic in Northop Hall, Mold or Hawarden.

8.25 The proposed closure of the Plough Lane junction has been part of the scheme since the 1992 Public Consultation exercise. The distances between the Plough Lane junction and the interchanges at St David's Park and Queensferry are well below current design standards and Plough Lane junction could not safely remain open. TD 22/05 (part of document DD41) requires that desirable minimum weaving lengths of 1,000 metres are provided between successive merges and diverges. TD22/05 allows this to be reduced to an absolute minimum standard of 450 metres in extreme cases with traffic forecasts at the lower end of the range. However, the more recent version of this standard TD22/06 has removed the option of the absolute minimum distance and requires that 1,000 metres is achieved.

8.26 At Plough Lane, to the south facing slip roads, a weaving length of between 630 metres (northbound carriageway) and 730 metres (southbound carriageway) could be achieved. To the north facing slip roads, a weaving length of between 100 metres (northbound carriageway) and 220 metres (southbound carriageway) could be achieved.

8.27 In addition to these sub-standard distances, departures in vertical curvature and stopping sight distance, together with the steep gradient of Aston Hill on the main carriageway would make the provision of a junction at this location unacceptable to the Assembly Government on safety grounds.

8.28 Provision would be made for traffic which currently uses this junction via the main carriageway and Queensferry Interchange and via the proposed Aston Distributor Road and Aston Road.

8.29 The scheme would result in an improvement in the traffic flow at the Queensferry Interchange despite the additional traffic flow transferred from the Plough Lane junction. Congestion at the existing roundabout at Queensferry is caused by a lack of capacity on the side roads leading away from the junction and in particular the capacity of the traffic signals at ASDA and MAKRO.

8.30 Discussions have taken place and are continuing with Flintshire CC with a view to improving the capacity of the roads leading away from the roundabout. Agreement has been reached over ways in which the B5129 route could be improved on both sides of the Queensferry Interchange. The Welsh Assembly Government has agreed to fund the agreed works.

8.31 Three arms of the roundabout would be above the ideal operational capacity (Roundabout Flow Capacity (RFC) of 0.85) in the pm peak period, by 2025. However, if the scheme were not to proceed, three of the arms would be above the ideal operational capacity in the am peak and four of the arms would be above the ideal operational capacity in the pm peak, by this time. The proposed scheme would provide an improvement to the Queensferry Interchange.

8.32 Of all the traffic entering Wales at Deeside, only some 26% has a destination beyond Northop on the A55. The rest of the traffic has a more local origin or destination and only a small percentage of this (3%) could transfer to an alternative route. This point is evidenced by the 110,000 or so movements that occur daily on the slip roads between Deeside Park (A548 junction) and the Mold (A494) slip roads. Currently there are some 34,000 vehicles per day using the Queensferry Interchange slip roads and about 26,000 using the St David's Park Interchange slip roads. The traffic growth that is forecast would come from increases in overall vehicle use, and from local developments which would require access from the A494, together with the traffic that is forecast to transfer when the A5117 Junctions scheme in England is complete (Autumn 2008). Consequently, even if all of the long distance traffic could be persuaded to transfer to an alternative route via the A548 (Flintshire Bridge) it would not remove the need to improve the A494 through Queensferry in the medium term.

8.33 The alternative route via the Flintshire Bridge is approximately 1.8 kilometres shorter. However, little traffic would transfer unless the whole route was upgraded to the same standard as the A494. Modelling shows that if a new high quality link were to be constructed between Kelsterton and Northop it could lead to around a 10% reduction in traffic volumes on the A494. To further maximise the amount of traffic which may use the alternative route it would be necessary to grade separate the roundabouts on the A548, to construct a parallel length of dual carriageway to avoid conflict with the Deeside Industrial Park traffic and add a free flow movements at Deeside Park, Kelsterton and Northop interchanges. However, such proposals would cost in the order of £140 million on current estimates, would take 8 to 10 years to implement by which time traffic flows on the A494 would have been in excess of the Congestion Reference Flow for a period of 5 years. Works would still be required to be undertaken on the existing A494 such as resurfacing, and significant structural refurbishment/replacement to the River Dee Bridge, the Wrexham/Bidston Bridge and the Queensferry viaduct.

8.34 Currently about 5% of traffic between the M56 and the A55 at Northop uses the A55 Chester Southerly Bypass, indicating the overwhelming preference

of drivers for the A494 route. The Chester Southerly route is about 8.5 kilometres longer. Typical journey times between Stoak Interchange (M56/M53) and Ewloe are between 3 and 5 minutes longer, (17% and 40% longer). On completion of the A5117 scheme in England these differences are expected to increase making the A55 route even less attractive. The A55 south of Chester is already congested at its eastern end (60,000 vpd are already using the A55 east of the A483 junction). Most of the A494 traffic consists of regular and local drivers who are aware of both routes but choose the A494 and would not be persuaded to switch.

8.35 It is very unlikely that traffic could be encouraged to use this route as an alternative because journey costs (time and money) would be greater. The longer route would also have greater impact in environmental terms. Major improvements would be necessary to the route to cater for the diverted traffic, possibly including widening to three lanes on the M53 and A55 between Stoak Interchange and the A483 junction. Even if this widening was carried out and drivers diverted to this route, it would not remove the need for improvement of the A494.

Mrs S Mewies AM (objection No. 193)

Additional points are: -

8.36 The Welsh Office published *Driving Wales Forward - A Strategic Review of the Welsh Trunk Roads Programme* (document DD27) in July 1998. It confirmed that the scope of the road network should remain unchanged. It identified a set of criteria to inform decisions, a set of strategic priorities and a short-term programme of improvements together with a series of area or corridor studies. The criteria and strategic priorities remain as key components of the policy and have been incorporated into *The Transport Framework for Wales*. This policy document sets down the vision for transport, and confirms the need to improve the transport capacity of the east/west corridor in the area and cross border links including the A494 and A55.

8.37 The process and assessment of the need to improve this section of the trunk road started with the NE Clwyd Study in 1989 which was updated by the Queensferry Transportation Study in 2000. The terms of reference of the NE Clwyd Study were to develop a traffic model capable of predicting annual traffic flows and summer flows on the main road network, and to identify potential traffic problems including the years in which the problems are anticipated to arise. Full account has been taken of the future effects of the proposed Third Dee Crossing (opened March 1998) and Flint bypass (not constructed) in predicting traffic flows on the road network.

8.38 A major conclusion of the Study was that traffic volumes on the A494/A550 trunk roads between Deeside Park and Queensferry Interchange already exceeded recommended flows with resulting congestion and that an increase in traffic volumes towards the year 2001 would extend the

overload south, to the section of the A494 between Queensferry Interchange and Ewloe.

8.39 As a result of the Study's conclusions, the Secretary of State for Wales announced in May 1991 the inclusion of a series of improvement schemes along the A494/A550/A55 corridor one of which was for the improvement of the A494 between Drome Corner and Ewloe Roundabout Junction.

8.40 In respect of the Human Rights Act, Article 1 of the first protocol to the European Convention on Human Rights, which is incorporated into the Act, provides that every person is entitled to the peaceful enjoyment of his possessions. However, this is a qualified rather than an absolute right and can be interfered with in the public interest. This trunk road scheme is in the public interest and the scheme proposals are the least intrusive means of achieving the purpose. The Welsh Assembly Government has a duty of care under Highways legislation to constantly keep the trunk road network under review. In discharging these functions it is considered that the scheme is needed because traffic volumes have, and are forecast to continue to grow and the trunk road is now carrying well in excess of the recommended maximum volume for a road of this type.

8.41 The 'brown route' forms part of a separate scheme, the A55 Northop to Ewloe Improvement, and does not form part of the draft Orders for the A494 Drome Corner to Ewloe Improvement being considered by this Inquiry. A separate Statutory Process would be undertaken with respect to the A55 Northop to Ewloe improvement at which time the issues relating to that project would be considered.

Mr C Sargeant AM (objection No. 192)

Additional points are: -

8.42 It was in consideration of the requirement of the 1998 "Driving Wales Forward" strategic review document that it would not be appropriate to take decisions on these schemes until a comprehensive study has been carried out to assess the contribution which public transport could make that gave rise to the Queensferry Transportation Study which was reported in 2000.

8.43 This is a relevant study and the report's findings are still valid.

8.44 In respect of the impact on the wider area, such as Shotton, Connah's Quay, Ewloe and Broughton, the study areas required for the various assessments carried out under the Environmental Impact Assessment are laid out within the Design Manual for Roads and Bridges and have been complied with. In respect of the wider area the Environmental Statement, Volume 2, Part 13 considers the impact of the proposals on Policies and Plans set by national, regional and local authorities.

8.45 It is planned to publish the final version of the Wales Transport Strategy (WTS) later this autumn. The new Government is considering comments which have been made on the draft strategy and to make sure that it reflects the priorities in 'One Wales'. Although it has not yet been published it is unlikely to produce changes in travel patterns or car usage in sufficient time to avoid the need to carry out this scheme.

8.46 The final North Wales Regional Transport Plan, which is a statutory requirement under the Wales Transport Act 2007, and which will follow the publication of the Wales Transport Strategy, is expected to be published during 2008. The outline plan and associated Strategic Governmental Assessment statement was received by the Welsh Assembly Government at the end of January 2007 and endorsed in April 2007.

8.47 The number of lanes required has been determined from traffic data provided from actual traffic counts on the A494 and from the Traffic forecasting Report (document DD45). From these figures, and using the geometric data for the A494 the Congestion Reference Flow (CRF) has been calculated.

8.48 The CRF for the existing A494 calculates as 71,000 vehicles per day. This means that this section of A494 is likely to become congested when the traffic volume exceeds 71,000 vehicles per day. Any increase in demand above this threshold can lead to flow breakdown, queuing and reduced throughput. Forecast Traffic flows for the A494 in 2025 exceed this figure of 71,000 AADT.

8.49 A further calculation undertaken for the next highest standard of carriageway (dual, three lane carriageway) produced a CRF figure of 106,000 vehicles per day. This, when compared to the forecast traffic flows, shows that dual 3 lane carriageway would be sufficient to accommodate the predicted traffic flows. The dual 3 lane carriageway would therefore be appropriate for the forecast traffic volumes.

8.50 The traffic forecasts used in the scheme proposals are based on data obtained from surveys undertaken in October 2005. Additionally, other data sources from the past 5 years have been integrated and utilised where appropriate. More recent surveys have been undertaken at specific locations to verify specific issues, the most recent of these being in May of 2007. The traffic model is therefore based upon the most current information.

8.51 These surveys included counts of both Heavy Goods Vehicles and other road users. They also include nationally recognised allowances for potential developments in the vicinity of the scheme. This development figure varies between low growth (little or no development), central growth (the most likely level of development) and high growth (an unexpectedly high level of development in the area). The traffic forecast is therefore robust.

8.52 The traffic forecasts take account of the impacts of the M56/A5117/A550

scheme. The Forecasting Report for that study, presented at the Inquiry for the A5117 scheme, demonstrated that this scheme would lead to an increase in traffic demand on the A494 at Aston Hill. There are two reasons for this increase: -

- the rerouting of some trips from the A55 Chester Southern Bypass to the A494; and
- the release of a number of trips presently suppressed by delays on the A5117.

8.53 The impact of the A5117/A550 scheme was covered in the Forecasting Report for the present scheme, and the changes in traffic flow are reasonably included within the present A494 traffic forecasts.

8.54 The daily traffic flow on the Rhuallt Hill section in 2006 was some 39,300. The layout of two downhill and three uphill lanes is appropriate for this section of the route. The existing traffic flow on the A494 at Aston Hill is already some 62,000 vehicles on average, per day, over 50% greater than the flows on Rhuallt Hill.

8.55 A replacement footbridge at Queensferry would be required to span Aston Road, the northbound 'off-slip' and diverge taper, the six lanes and hard shoulders of the A494, and the southbound 'on-slip' with merge taper. The span would be some 85 metres. The structure would require a minimum clearance of 6 metres above the highest point on the carriageway as the A494 would be raised above existing at this point to improve the vertical alignment. This would mean that the footbridge would be about 8 metres above Aston Road.

8.56 The existing footbridge has a limited degree of use; an average of 43 per day in the summer period, and 32 per day in the winter. This use is spread evenly through the day, with no morning or afternoon peaks that might suggest use by school pupils.

8.57 Should the bridge be removed the alternative routes provided are via the Queensferry Interchange where existing and revised footbridges link from the bottom of Gladstone Way to the town centre, and via the Plough Lane Bridge which links footpath 30 from Mancot to Aston at The Plough.

8.58 The Disability Discrimination Act allows the provision of a structure without access for all users, where the need to provide access for the disabled would in practice mean that the structure would not be provided at all. However, for able-bodied users the additional distance involved in the alternative routes would be modest or slight according to route. Able-bodied users would find that the alternatives would not be significantly less convenient than the alternative of a bridge with steps.

8.59 The current 50 mph speed limit that applies to part of the existing route was introduced due to increasing traffic volumes with associated safety concerns. These concerns emanated from the many substandard features exhibited by the existing route. These substandard features include:

- Too many slip roads too close together;
- Lack of or inadequate acceleration and deceleration lanes ;
- Inadequate forward visibility in places (Stopping Site Distance), particularly on the Queensferry flyover;
- Poor horizontal and vertical alignments; and
- Lack of verges in places.

8.60 All of these features would be addressed by the proposed scheme so the need for the existing 50 mph speed limit would be removed.

8.61 It would not be possible to accommodate a northbound off slip to St David's Park Interchange safely as part of the current scheme due to the proximity of the A55 Ewloe Interchange and the lack of adequate weaving lengths. However, a replacement for this facility is proposed as part of the next phase in the improvement programme. Following the 2006 public consultation a connector road has been added to the proposed scheme to deal with traffic from the A55 Chester Southerly, which accounts for around 46% of the vehicles using the existing slip road. This would deal with concerns regarding potential for traffic diverting through Tinkersdale and through Hawarden village.

8.62 Traffic flows on the Queensferry Interchange have been modelled using computer software known as ARCADY6. The results of this modelling confirm the beneficial effect of the proposed scheme on traffic flows at this Interchange.

8.63 In addition to the photomontages that have been produced at specific points on the scheme the visual impact of the works has been fully assessed in the Environmental Statement, Volume 2, Part 4 (ES). The assessments are comprehensive and consider the impact of the proposals from many viewpoints. They are fully reported within the Visual Impact Schedules of the ES and the associated drawings.

Cllr C Ellis (objection No. 146)

Additional points are: -

8.64 It would not be possible to accommodate a northbound off slip to St David's

Park Interchange safely as part of the current scheme due to the proximity of the A55 Ewloe Interchange and the lack of adequate weaving lengths. A replacement for this facility is proposed as part of the next phase in the improvement programme. A proposed connector road has been added to the scheme to deal with traffic from the A55 Chester Southerly, which accounts for around 46% of the vehicles using the existing slip road. This partially deals with concerns regarding potential for traffic diverting onto the local road network.

8.65 Only the northbound off-slip of St David's Park Interchange would be closed under the proposals. The remaining slip roads would remain open. During construction, alternatives routes would be available prior to the closure of this slip road. Whilst some disruption might occur during construction, the remaining slip roads would remain operational during the construction period.

8.66 The Assembly Government is unaware of the detail of the two planning applications for landfill sites and is therefore unable to comment. The matter of vehicle movements forms an important part of the Planning Process. FCC is fully aware of the A494 Drome Corner to Ewloe proposals and would be obliged to consider the impact of any planning applications in the light of this knowledge. It is a matter for the FCC as the Planning Authority to grant or reject these planning applications and not a matter for this Inquiry.

Cllr H Gambino (objection No. 310)

Additional points are: -

8.67 There would be no increase in the severance due to the widening of the trunk road. Under the proposed scheme the existing pedestrian and side-road links between residential areas would be maintained or replaced to ensure that communities were not cut off from their surroundings. The Plough Lane Bridge would remain as the link for road vehicles between the residential areas east and west of the trunk road, with a negligible effect on journey distances. The proposed footpath connection across and alongside the Wrexham – Bidston railway and alongside the trunk road to Lower Aston Hall Lane is considered particularly important if the community is not to be divided further. With the pedestrian link, the community would not be divided any more than it is at present.

8.68 The number of residential properties anticipated to be demolished at the time of the public consultation in 1992 is stated in document DD55 to be 33 for the 'Blue' route. The number of houses has increased primarily due to detailed design work including landscape mounding and screening.

8.69 The proposed scheme shown in the draft Orders would require the demolition of 53 residential properties, of which 6 are not habitable or capable of economical repair. The shortage of housing in the County is

recognised, and the loss of these houses has been kept to the minimum necessary for the construction of the proposed scheme.

8.70 The current 50 mph speed limit that applies to part of the existing route was introduced due to increasing traffic volumes with associated safety concerns. These concerns emanated from the many substandard features exhibited by the existing route. The draft Orders as proposed do not include any change to the existing speed limit. Any future change to the speed limit would be subject to a separate statutory process.

8.71 The Environmental Statement (ES) and Flintshire County Council's own Air Quality Assessment demonstrate that there are currently no exceedences of any of the existing UK or EU air quality standards and forecasts indicate that there would be no exceedences of any of these standards in 2010. By 2025 the air quality will continue to meet these existing standards and the provisional 2010 standard, whether or not the proposed scheme is implemented. Many of the properties currently worst affected by the road would receive a benefit from the proposed scheme. The rate of decline in some pollutant levels would be slower if the scheme is built, primarily due to the anticipated increase in traffic speed being used in the air quality modelling. The scheme is not expected to attract traffic from other routes. The predictions are very much the worst case and underestimate the benefits of the scheme. If the scheme is not built and the forecast congestion occurs, the pollution levels could be higher than modelling currently predicts.

8.72 Routes via the Flintshire Bridge and via the M56/M53/A55 have been considered, but rejected as viable alternatives. Approximately three-quarters of the traffic on this A494 corridor has a relatively local origin or destination and could not transfer to an alternative route.

Cllr G Hardcastle (objection No. 634)

Additional points are: -

8.73 The footpath crossing alongside the Wrexham–Bidston Railway line and the link down to Old Aston Hall Lane are essential links in the local footpath network. The provision of this footpath would avoid further severance to the local community. It would be provided as a replacement for the existing subway and the existing at-grade crossing of the A494, both of which are in a similar location. There would be an alternative route across the road via the Plough Lane overbridge for anybody who does not wish to use the path alongside the railway, and that might add a maximum of some 1 kilometre to any single journey, depending on origin and destination.

8.74 A footbridge at this location has been considered and rejected because the footbridge would be visually intrusive due to the height of the road embankment and would require substantial steps and/or ramps close to adjacent houses. Additional land would be required from residential

properties on Old Aston Hill and current usage figures are lower than at the Chevrons Road footbridge, but here alternative routes are considerably longer.

8.75 The number of lanes required has been determined from traffic data provided from actual traffic counts on the A494 and from the Traffic forecasting Report (document DD45). The dual 3 lane carriageway is appropriate for the forecast traffic volumes.

Cllr P Heesom (objection No. 312)

Additional points are: -

8.76 Even if all of the long distance traffic could be persuaded to transfer to an alternative route via the A548 (Flintshire Bridge) it would not remove the need to improve the A494 through Queensferry in the medium term.

8.77 The trunking of the A548 is not relevant to this Inquiry. It would not remove much traffic from the A494. It cannot be considered a viable alternative as it would not remove the need to improve the A494 through Queensferry.

8.78 The Flint Bypass was considered and rejected at Public Inquiry in 1990, some 17 years ago. As such, it does not have any relevance to the A494 proposals.

8.79 The Welsh Development Agency development at Shotwick Road was considered at Public Inquiry and the proposals were rejected. The traffic figures presented at that Inquiry are no longer pertinent because they included traffic from the proposed development. Traffic forecasts for the A494 proposals are presented in the Traffic Forecasting Report (document DD45).

Cllr M Warburton (objection No. 1883)

Additional points are: -

8.80 One of the objectives of the improvement proposed to the A494 between the River Dee and Ewloe is to remove congestion. Consequently the need and likelihood for traffic to join the “old road” would be reduced if the scheme proceeds.

8.81 The traffic flow on the B5129 is a matter which should be addressed to Flintshire County Council (FCC) as the highway authority for that road. The agreement made with FCC to carry out minor widening works and re-sequencing of traffic lights would be to relieve congestion at the Queensferry roundabout, not to resolve all issues relating to the B5129.

8.82 The proposed layout of the Queensferry Interchange would be similar to the existing. The proposed Aston Distributor Road would provide a simple link between Ewloe, Aston and Queensferry. The St David's Park Interchange would operate largely as it does now although the approach from Ewloe past the weighbridge, and the slip road from the roundabout onto the trunk road, would be noticeably different from the existing layout. This would improve the traffic flows by removing the current congestion which occurs at the junction between Holywell Road and Mold Road. It is proposed that the entry and exit to Liverpool Road/Old Aston Hill be revised to deter anyone wanting to use it as a through route.

8.83 The use of roundabouts on the new sections of side roads would provide the best flow characteristics whilst maintaining priorities.

8.84 The existing Chevrons Road footbridge linking Dee View with Clay Lane spans Aston Road and the four lanes of the A494. Stepped ramps lead northwards from each end of the bridge to give access to Dee View and, via a short length of footway, Clay Lane.

8.85 A replacement bridge in this vicinity would be required to span Aston Road, the northbound 'off-slip' and diverge taper, the six lanes and hard shoulders of the A494, and the southbound 'on-slip' with merge taper. The span would be some 85 metres. The structure would require a minimum clearance of 6 metres above the highest point on the carriageway as the A494 would be raised above existing at this point to improve the vertical alignment. This would mean that the footbridge would be about 8 metres above Aston Road.

8.86 The removal of the Chevron's Road footbridge would not require any person to cross busy roads on foot. All pedestrian access at the Queensferry Interchange would be maintained by grade separated footbridges, by re-use of the existing bridges on the north side and by a new footbridge on the south side.

8.87 The Aston Hill Link across the A494 would be maintained by the inclusion of a walkway under the Wrexham-Bidston railway bridge. The final design of the walkway under the rail bridge would incorporate lighting systems that would prevent dazzling of train drivers.

8.88 The traffic flows on the A494 at this location have predominately a local origin or destination. Approximately three-quarters of the traffic using the A494 falls into this "local" category and as such could not transfer to alternative routes. It is not the intention that this improvement should allow free-flow conditions just for through traffic, with local traffic moved on to other roads. The improvement of the A494 is to directly improve travelling conditions for all users of the route, the majority of who are local.

8.89 The current 50 mph speed limit that applies to part of the existing route was introduced due to increasing traffic volumes with associated safety

concerns. These concerns emanated from the many substandard features exhibited by the existing route. The draft Orders as proposed do not include any change to the existing speed limit. Any future change to the speed limit would be subject to a separate statutory process.

8.90 There are no schools within 150 metres of the proposed scheme and consequently predicted pollutant concentrations would be low and any impact would be very minor and of low significance. With regard to noise and its effect on local schools, changes in road traffic noise levels are predicted to be minor. Of the five schools in the vicinity of the scheme two are predicted to remain unchanged, two are predicted to have a small increase and one is predicted to experience a small decrease.

Cllr E Jones (objection No. 601)

Additional Points are: -

8.91 The guideline gradient for access ramps suitable for wheelchair and other less-able users is 1 in 20, with the provision of horizontal rest areas at every 10 metres. As the land at the bridge location is on a gradient itself, the ramps must either a) face southwards in which case the construction is reduced but the additional distance at ground level must be included; b) face northwards in which case the ramps must be extended to 'chase' the descending ground, or c) form a zig-zag.

8.92 Such a replacement bridge structure would be prominent in views from properties on and near the corner of Dee View and Aston Road. It would also be prominent in views from Clay Hill Cottage in the winter when existing trees were leafless.

8.93 The Disability Discrimination Act allows the provision of a structure without access for all users, where the need to provide access for the disabled would in practice mean that the structure would not be provided at all. However, for able-bodied users the additional distance involved in the alternative routes would be modest or slight according to route. Able-bodied users would find that the alternatives would not be significantly less convenient than the alternative of a bridge with steps.

8.94 The proposed scheme would maintain the existing access at Footpath 30. The need for an improved connection between Footpath 30 and the Plough Lane Bridge is recognised. An alternative route (within the existing highway boundary) between the existing track and the access from Plough Lane Bridge would be at the most gentle gradient possible.

8.95 Closure of footpath 122 would be required in order to accommodate a balancing pond at the St David's Interchange.

Miss N Frost (objection No. 640)

Additional points are: -

8.96 The number of lanes required has been determined from traffic data provided from actual traffic counts on the A494 and from the Traffic forecasting Report (document DD45). From these figures, and using the geometric data for the A494 the Congestion Reference Flow (CRF) has been calculated. The dual 3 lane carriageway is appropriate for the forecast traffic volumes.

8.97 Some 74% of the traffic on this A494 corridor has a relatively local origin or destination and could not transfer to the alternative route using the A55 around Chester. Currently about 5% of traffic between the M56 and the A55 at Northop use the A55 Chester Southerly Bypass, indicating the overwhelming preference of drivers for the A494 route. The Chester Southerly route is about 8.5 kilometres longer. Typical journey times between Stoak Interchange (M56/M53) and Ewloe are between 3 and 5 minutes longer, (17% and 40% longer).

8.98 On completion of the A5117 scheme in England these differences are expected to increase making the A55 route even less attractive. The A55 south of Chester is already congested at its eastern end (60,000 vpd are already using the A55 east of the A483 junction). Most of the A494 traffic consists of regular and local drivers who are aware of both routes but choose the A494 and would not be persuaded to switch.

8.99 In the period 2002 to 2004, temporary signs were in place on the A494 and M56 advising drivers to use the A55 due to long term roadworks on the A494/A550 (the construction of the Deeside Park to Drome Corner scheme). Similarly, since 2006, the same signs have been in place advising drivers to use the A55 due to the Highways Agency A5117 improvement scheme. Despite these signs being in place for 4 out of the last 5 years, there is no evidence to indicate any significant transfer of traffic to the A55.

8.100 Traffic volumes have been forecast on the A494 with the assumption that the Woodbank works are completed. The standard of carriageway provided has been determined from the forecast traffic figure with these assumptions in place. The completion of works at Woodbank will not relieve congestion on Aston Hill.

8.101 The scheme would result in an improvement in the traffic flow at the Queensferry Interchange despite the additional traffic flow transferred from the Plough Lane junction. Congestion at the existing roundabout at Queensferry is caused by a lack of capacity on the side roads leading away from the junction and in particular the capacity of the traffic signals at ASDA and MAKRO.

8.102 Planning Policy Wales and the companion document TAN 18 Transport

(document DD92), published in March 2007, was not published until after publication of the ES. This document highlights the interaction between land use planning and transport and is a document which local planning authorities use when preparing their UDPs.

8.103 Transfer of freight to the railways was considered in the Queensferry Transportation Study published in 2000. It was recognised that the overall impact of increased rail freight facilities on road traffic flows would be small although the potentially high impact on HGVs made it worthy of consideration. The option of 'improving rail freight facilities' is, however, outside the control of the Welsh Assembly Government due to the commercial and operational requirements of the industry. The National Assembly for Wales and other public authorities can only try to ensure that policies are compatible with encouraging rail freight and safeguarding potential land for rail terminals. The Welsh Assembly Government provides grant aid where appropriate to encourage the use of rail freight services.

8.104 The Study concluded that the introduction of further rail freight is likely to induce some switch from road to rail – but absolute numbers are unlikely to be significant.

8.105 New drainage would generally be provided throughout the scheme unless existing drainage is in good condition and adequate. The drainage system would be designed for a 1:100 year storm together with 20% uplift to allow for the possibility of changes in rainfall arising from global warming.

8.106 Lane one of the A494 at this location would become the northbound on slip road from Queensferry Interchange. As a result, the main A494 traffic would be moved away from the existing boundary wall by approximately 8 metres. A concrete barrier would be provided between the main carriageway and slip road at this location. Traffic on the slip road itself would be travelling at a slower speed than the main carriageway traffic as it left Queensferry Interchange. It would not merge with the main carriageway traffic until after the Chester to Holyhead Railway Bridge.

8.107 A further concrete vehicle restraint barrier would be situated between the edge of the slip road and the existing brick wall to provide further vehicle containment facilities.

8.108 Glynne Street is already substantially shielded by the properties in Queen Street. Under the scheme proposals, the existing brick wall between the A494 and Queen Street would be increased in height by a further 0.5 metres to provide additional mitigation. This, combined with the movement of the main noise source away from Glynne Street, would provide additional mitigation, limiting the predicted (worst case) increase in noise to 1 dB(A) by 2025 at Miss Frost's property.

8.109 Landscape proposals seek to balance the need for rapid early growth with the requirements of sustainable woodland development and wildlife

habitats. The proposals would include a number of techniques for rapid effect, including the use of faster-growing 'nurse' species mixed with slower native trees, planting large nursery trees in key locations to give immediate effect, transplanting coppice stools from existing plantations, and good soil handling and ground preparation.

8.110 The scheme has been designed to retain as much of the existing planting as possible to maximise visual screening. However, planting, whether existing or proposed is not considered to provide mitigation against noise. Consequently, planting has not been taken into account in the noise calculations undertaken as part of the environmental assessment for the scheme.

Mr N Howell (objection No. 43)

Additional points are: -

8.111 The alternative route via the A548 Dee Crossing to the A55 was debated at the Public Inquiry into the recently completed adjacent trunk road improvement to the north of the River Dee, and the Inspector rejected it as a viable alternative route. In his summary, the Inspector for that scheme stated that a substantial number of improvements and repairs would still be required to the A494/A550 between Woodbank and Ewloe and if it were constructed it would, with the full development of Deeside Industrial Park, lead to congestion at the Deeside Park junction and the transfer of traffic back to the A494/A550 route. Ho goes on to conclude that the appraisal is sound and is reason enough for rejecting it without considering the impact the provision of such a link would be likely to have on the environment and that this alternative proposal should not be adopted by the Welsh Office.

8.112 Every highway scheme is assessed on its own economic grounds, without reliance on the effects and costs of other schemes. The Economic Assessment Report shows that this scheme is viable in its own right. The economic appraisal of the scheme has been undertaken in accordance with the approach laid out by the Department for Transport. The process considers the monetarised costs and benefits of the scheme over the 60 year period following the anticipated opening date of 2010. In this process, the costs of building and maintaining the scheme are compared with the values of the benefits, in terms of time savings, accident reduction and other cost savings resulting from the scheme. An allowance has been made within the scheme costs to cover Part 1 Claims that includes for claims of injurious affection that may arise as a consequence of the scheme.

8.113 Both the costs and benefits of the scheme have been considered in detail. The ratio of costs to benefits for the proposals is 1:2.5 at central growth figures. A similar exercise to the above has been undertaken for the suggested alternative route over the Flintshire Bridge. The cost to benefit ratio for this alternative is 1:1.7, confirming that the alternative provides a 30% poorer rate of return than that of the proposed scheme.

8.114 Improvements to the A494/A55 corridor (as far as Northop) were first included in the Trunk Road Forward Programme in 1991. Strategically, the schemes which make up the corridor improvement are considered jointly but due to limited resources each scheme has to be prioritised and taken forward individually. The proposed scheme stands independently of the A494/A55 junction scheme, and is designed to operate effectively whether or not an adjacent scheme is carried out. The Economic Assessment Report considers the scheme independently. If an adjacent scheme is carried forward, the Economic Assessment for that scheme would consider the existing situation with the Drome Corner to Ewloe Improvement in place.

The Ewloe Green A55 Action Group (objection No. 7)

Additional points are: -

8.115 In relation to the Flintshire County Council Unitary Development Plan (UDP), the land for the proposed scheme has been safeguarded under the draft version of the UDP. Prior to this draft UDP the land for the scheme was similarly safeguarded under the Alyn and Deeside Local Plan published in 1994.

8.116 In order to minimise disruption to the travelling public it is intended that two lanes of traffic would be maintained in both directions for the majority of the construction period. On occasions it would be necessary to reduce the running lanes to account for specific operations such as bridge beam/gantry erection or traffic management changes. The instances of this would be kept to a minimum and fully publicised before the event. The contractor's operational plan would include facilities to clear breakdowns within the works section so that two-lane running would be restored quickly. Additional traffic build-up as a result of the construction works is not therefore expected to occur except in exceptional circumstances.

8.117 Whilst the existing problem of car parking on Liverpool Road outside the Ewloe Green School is recognised, the forecast 3% increase in traffic flow is not considered to present an additional hazard to pupils.

8.118 FCC has expressed concern that some traffic may use Smithy Lane as an alternative route to reach St David's Park Interchange. It is considered that the numbers would be small due to the difficulties and delays that would occur at the junction with Liverpool Road and because better and quicker alternatives exist for the majority of drivers.

Mr J Gray (objection No. 313)

Additional points are: -

8.119 The air quality assessment carried out for the proposed scheme has followed UK guidance in predicting vehicle emissions from the traffic using

the A494 and the local road network. These emissions have been calculated using the emissions factor database produced by the UK National Atmospheric Emissions Inventory (NAEI) and the traffic data provided by the Transportation Department of Faber Maunsell. This emissions database includes emissions dependent on the type of vehicle, the EURO standard of the vehicle, the speed of the vehicle and the type of fuel used by the vehicle. From these emissions data, calculations are made to determine the emissions of each road link and ultimately the whole road network for the different scenarios. The predictions have been made using a vehicles database which is based on an average UK fleet for the years concerned, as outlined in the DMRB guidance.

8.120 On this basis, the emissions from the road network have been predicted for the existing case (2005), the proposed opening year (2010), and the proposed design year (2025). For 2010 and 2025 the predictions have been made for a scenario without the scheme (a 'Do-Minimum' scenario) and with the scheme (a 'Do-Something' scenario). These predictions have indicated the following:

- Emissions will decrease with time with or without the scheme.
- This decrease is due to predicted improvements in vehicle emission controls, which offset any traffic growth or increase in speed.
- The Do-Something scenario does slow down, moderately, the reduction in emissions throughout the road network in both 2010 and 2025.

8.121 These emissions have been modelled and the concentrations predicted at a number of worse-case sensitive receptors. Depending on the position of these receptors relative to the realignment of the A494, the impact is adverse or beneficial. There were no predicted exceedences of the UK air quality objectives. The UK air quality objectives have been designed to protect the health of the most vulnerable members of society.

Mr C Martin (objection No. 46)

Additional points are: -

8.122 The existing route along Clay Hill and across Chevrons Road footbridge is used by recreational walker as well as those making direct journeys. The Highway maintenance agent would require access to the drainage system north east of Clay Hill Lane. The provision of pedestrian access along this route and returning to Gladstone Way allows an alternative recreational circuit, which is in accordance with Assembly polices to promote walking and healthy exercise. The balancing ponds and other elements of the drainage system would be required for flood attenuation and the treatment of run-off. They would be fenced to prevent accidental straying into danger. The primary use of the ponds would be to provide storage of water during

periods of rain, allowing treatment of the water before it is discharged at a controlled rate. As such the ponds are not expected to permanently hold large volumes of water. Whilst the use of this type of attenuation pond provides environmental and ecological benefits, this would be subsidiary to their main usage.

8.123 Where a need to mitigate any increased noise levels which would arise from the proposed scheme has been identified, noise barriers consisting of soil mounds or timber fences have been proposed. The maximum increase in noise at Mr Martins property would be +1db(A) in 2025. Due to the isolated and elevated position of his property any noise barrier would have to be excessively high and long. It would cause unacceptable visual intrusion.

8.124 The issue of gating Clay Hill Lane has been raised with Flintshire County Council as Highway Authority for this piece of road. It has indicated that it would not be in favour of this course of action due to ownership and maintenance issues which may arise in the future.

Mr D Norris (objection No. 326)

Additional points are: -

8.125 The number of lanes required has been determined from traffic data provided from actual traffic counts on the A494 and from the Traffic Forecasting Report. The dual 3 lane carriageway proposed would be appropriate for the forecast traffic volumes.

8.126 Approximately three-quarters of the traffic using the A494 has a local origin or destination and would not transfer to alternative routes. The improvement of the A494 would directly improve travelling conditions for all users of the route, the majority of whom are local. Whilst some journeys may be slightly increased there are considerable benefits for the majority of the three-quarters of the travellers who are local. The effect of the scheme with respect to the distance that local traffic has to travel has been taken into account in the assessments reported in the Environmental Statement.

8.127 The noise impact of the scheme has been based on predicted future road traffic noise levels, which uses predicted future (high growth) traffic flows. Noise levels have been calculated for both the Do Minimum (without scheme) and Do Something (with scheme) scenarios using the Calculation of Road Traffic Noise (CRTN) methodology. This uses the Annual Average Weekday Traffic flow, which takes into account seasonal variations in traffic flow and so CRTN predicts the long term average road traffic noise level. The CRTN methodology allows for the effects of gradient which can increase road traffic noise levels.

8.128 The Do Something noise levels have been predicted assuming all vehicles

are travelling at approximately 70mph. Traffic noise would be lower if traffic were to be moving more slowly. The causes of increase in noise levels (tyre noise and propulsion noise of HGVs as they climb the hill) have been taken into account in the noise prediction model.

8.129 CRTN predicts road traffic noise levels in neutral conditions, that is, no wind and no precipitation. Wet roads and wind conditions can increase road traffic noise levels. However these conditions would increase noise levels regardless if the scheme goes ahead or not. The appropriate assessment is to compare predicted long term average road traffic noise levels with and without the scheme.

8.130 The scheme would include noise barriers and low noise surfacing. If the scheme were to proceed, road traffic noise levels at Mr Norris's property are predicted to decrease by 2 dB(A) in the opening year, 2010. In the design year (2025) Do Something, road traffic noise levels are predicted to increase by 1 dB(A), compared to the 2025 Do Minimum scenario. This is due to a decrease in predicted average speeds, as a result of congestion, in the 2025 Do Minimum scenario, reducing road traffic noise levels. However, the 2025 Do Something noise level would be 1 dB(A) less than the 2010 Do Minimum noise level.

8.131 The Welsh Assembly Government created a 'Sustainable Development Action Plan' in line with the requirements of the National Assembly's 'Sustainable Development Scheme'. The Action Plan is how the Assembly Government would implement the commitments in the new scheme.

8.132 Under the section 'Liveable Places – Strong Communities' it is stated that 'a strong framework is already in place to enable communities to develop more sustainability including: -

- New National Planning Guidance reflecting needs;
- Transport Framework routed in principles;
- Communities First programme working with the most deprived communities to help them to identify and tackle local issues;
- 'Iaith Pawb' a National Plan of action for a bilingual Wales;
- Create a Design Commission;
- Local Community strategy.

8.133 The Trunk Road Forward Programme, which includes the A494 Drome to Ewloe Improvement, was created in accordance with the second item of the Action Plan.

8.134 The perceived problems and risks associated with foreign HGV traffic would not be as a consequence of the proposals within the draft orders for the scheme. With or without the proposed scheme, traffic volumes will continue to increase and the numbers of possibly problematic vehicles/drivers within those volumes will change accordingly.

8.135 In relation to the Human Rights Act, Article 1 of the first protocol to the European convention on Human Rights which is incorporated into the Act provides that every person is entitled to the peaceful enjoyment of his possessions. However, this is a qualified rather than an absolute right and can be interfered with in the public interest. The Welsh Assembly Government considers that this trunk road scheme is, indeed, in the public interest and the proposals are the least intrusive means of achieving the purpose.

8.136 Article 8 gives everyone the “right to respect” for his or her home but this is also a qualified rather than absolute right and can be interfered with after taking account of various considerations. The pertinent conditions for this scheme are in the interests of public safety and economic well being and freedom of others.

8.137 Even if all of the long distance traffic could be persuaded to transfer to an alternative route via the A548 (Flintshire Bridge) it would not remove the need to improve the A494 through Queensferry in the medium term. The alternative route via the Flintshire Bridge is shorter. However, little traffic would transfer unless the whole route was upgraded to the same standard as the A494. Modelling shows that if a new high quality link were to be constructed between Kelsterton and Northop it could lead to around a 10% reduction in traffic volumes on the A494.

8.138 To further increase the amount of traffic which might use the alternative route it would be necessary to grade separate the roundabouts on the A548, construct a parallel length of dual carriageway to avoid conflict with the Deeside Industrial Park traffic and add free flow movements at Deeside Park, Kelsterton and Northop interchanges. Such proposals would be prohibitively expensive and there would still be a need to carry out maintenance and repair works on the existing A494.

8.139 Currently about 5% of traffic between the M56 and the A55 at Northop use the A55 Chester Southerly Bypass, indicating the overwhelming preference of drivers for the A494 route. The Chester Southerly route is about 8.5 kilometres longer. It is very unlikely that traffic could be encouraged to use this route as an alternative as journey costs (time and money) would be greater.

Mr P Davies (objection No. 309)

Additional points are: -

8.140 Hard shoulders are proposed as part of the improvement to provide an opportunity to move accidents from the running carriageway, or, where this was not possible, to provide emergency lane capacity to maintain traffic throughput. The scheme proposals include significant measures which provide increased segregation and protection of properties. The existing carriageway has very few measures that provide segregation or vehicle restraint. These include some limited safety barrier and pedestrian guard railing. Hard shoulders would allow incidents to be cleared more quickly, thus maintaining free flow conditions for a greater length of time.

8.141 Vehicle restraint systems are proposed to each verge for the full length of the scheme. These generally take the form of steel barriers. However, at some locations where space is limited (e.g. between the main carriageway and the Aston Distributor Road and between the main carriageway and the Queensferry Northbound on slip road), a concrete barrier is proposed. A concrete barrier is also proposed over the entire length of central reserve to prevent cross carriageway incidents.

8.142 Traffic growth has been significant on this corridor in over the past 10 years. This growth has been in line with national traffic growth forecasts and is consistent with the traffic forecasts used in the scheme proposals. Surveys carried out for use in the forecasts included counts of both Heavy Goods Vehicles and other road users. They also include nationally recognised allowances for potential developments in the vicinity of the scheme. This development figure varies between low growth (little or no development), central growth (the most likely level of development) and high growth (an unexpectedly high level of development in the area). The traffic forecast is therefore robust.

8.143 The percentage of HGVs has been obtained from actual traffic counts undertaken during surveys in October 2005, together with some later data. The percentage of HGVs used in assessments is therefore robust.

8.144 The percentage of HGVs on the A494 route is between 7% and 8% dependant upon which section of the route is being considered. National averages for this type of road are between 7% and 12%. The HGV percentage on this route is within the range of the national averages.

8.145 Of all the traffic entering Wales at Deeside, only around one quarter has a destination beyond Northop on the A55. The remainder of the traffic has a more local origin or destination and only a small percentage of this (around 3%) could transfer to an alternative route. Consequently, even if all of the long distance traffic could be persuaded to transfer to an alternative route via the A548 (Flintshire Bridge) it would not remove the need to improve the A494 through Queensferry in the medium term.

8.146 In respect of the Human Rights Act, Article 1 of the first protocol to the European Convention on Human Rights, which is incorporated into the Act, provides that every person is entitled to the peaceful enjoyment of his possessions. However, this is a qualified rather than an absolute right and can be interfered with in the public interest. This trunk road scheme is in the public interest and the scheme proposals are the least intrusive means of achieving the purpose.

Mr D Mawdsley (objection No. 590)

Additional points are: -

8.147 The Congestion Reference Flow (CRF) for the existing dual carriageway has been calculated at 71,000 vehicles per day. This figure is already exceeded on a regular basis, leading to congestion. For the purposes of calculating the CRF, congestion is defined as the situation where the hourly traffic demand exceeds the maximum sustainable hourly throughput of the link.

8.148 The Queensferry Transportation Study examined whether there were practical alternatives to private car use on this corridor, and concluded that whilst improvements to public transport could attract some travellers to switch, the road traffic would continue to grow. A significant increase in the use of the Wrexham – Bidston line has been reported recently, but road traffic has continued to increase. Between 1995 and 2005, the traffic flows (based on actual counts) for the Queensferry to Ewloe section increased from 54,000 vehicles on an average day to 62,000 vehicles. At December 2006 this figure had increased further to over 63,000 vehicles. Governments and the public are increasingly aware of the need to reduce carbon dioxide emissions, but changes in travel patterns or car usage have yet to occur. The project has been evaluated against Low Growth, Central Growth and High Growth forecasts. Even at the lowest rate of forecast traffic growth, the need for the scheme is demonstrated.

8.149 It is recognised that works on this scale have the potential to cause disruption and disturbance, and so the Contractor has been brought in at an early stage in the project planning so that practical measures to minimise disruption and disturbance can be planned. A Construction Environmental Management Plan is in preparation, and this would be maintained throughout the project. It includes working methods and information covering noise, pollution, dust, light, ecology, access to property, formal licences from regulatory bodies, etc.

8.150 In order to minimise disruption to the travelling public it is intended that two lanes of traffic would be maintained in both directions for the majority of the time.

8.151 The existing A494 corridor does not have the capacity to carry the forecast traffic demand. Due to the nature of the traffic (some 78% of local origin or

destination) it is not possible to manage the traffic via different routes. The use of public local transport was considered in depth in the Queensferry Transportation Study of 2000. Such proposals would not remove the need for the road improvement. Transfer of freight to the railways was also considered in the Queensferry Transportation Study. The overall impact of increased rail freight facilities on road traffic flows would be small although the potentially high impact on HGVs made it worthy of consideration.

Mr M Farrow (objection No. 465)

Additional points are: -

8.152 Improvements on the corridor, first announced in 1991, have always been planned to address the problems in order of severity. Strategically, the schemes which make up the corridor improvement are considered jointly but due to limited resources each scheme has to be prioritised and taken forward individually. The proposed scheme stands independently of the A494/A55 junction scheme, and is designed to operate effectively whether or not an adjacent scheme is carried out.

8.153 The dual 3 lane carriageway is appropriate for the forecast traffic volumes. The capacity of side roads affected by the scheme proposals including the collector distributor roads have been reviewed during scheme preparation and have been incorporated into the traffic model. The capacity of all side roads has been assessed and each is forecast to be below its congestion reference flow in 2025. The capacity of the side roads does not have a bearing on the capacity of the A494.

8.154 The Aston Distributor Road would not be constructed in Green Barrier land, apart from a narrow strip of land which would be taken from Holly House. A narrow wedge of land adjacent to the existing A55 – A494 junction at the southern end of the scheme, and further land between Lower Aston Hall Lane and the Queensferry Interchange, would be needed for the scheme and are also designated Green Barrier. In each of the locations where the proposed scheme would take land from designated Green Barriers, the land taken is immediately adjacent to the existing trunk road. The purpose of Green Barrier policy is to prevent the coalescence of separate communities and housing areas. In each case the use of this land would not contribute to infilling or the coalescence of settlements. It would not unacceptably harm the open character and appearance of the Green Barrier. Major junctions in a rural setting are not affected by additional development. The Improvement scheme would not affect the objectives of Green Barrier policy GEN5. Flintshire County Council has not raised any objection to the proposals in relation to this UDP policy.

8.155 It would not be possible to provide a safe exit from Old Aston Hill directly onto the trunk road, and so Old Aston Hill was originally proposed to be linked to Aston Road at The Plough. This proposal resulted in many representations from residents concerned that Old Aston Hill would be used

as a significant through-route to avoid the trunk road. As a result the Aston Distributor Road was introduced to the scheme to remove this possibility. Whilst it is accepted that this would be closer to some properties on Old Aston Hill, the road in itself would offer some shielding from the trunk road which does not exist at present. Additionally, the area between the trunk road and ADR would offer the opportunity for additional planting, further shielding the properties on Old Aston Hill from the trunk road traffic.

8.156 The proposed distributor road would be slightly below the natural ground level. Its visibility would be reduced as the proposed planting shown in the Environmental Masterplan develops. Mounding to the western side of the roundabout would also screen this part of the distributor road.

8.157 Accident data has been obtained from Flintshire County Council who is, in turn, provided with data from various sources such as the Police, the Maintenance Authority etc. Whilst this data is compiled in as complete a manner as possible, some accidents are not recorded or are omitted from the records. This does not, however, remove the onus on the Assembly Government or its agents to present the safest design possible within given constraints. The A494 Improvements have been progressed on this basis. The incomplete accident data has no detrimental effect on the design.

8.158 The proposed improvements works at the St David's Park Interchange have been designed to current standards and for forecast traffic volumes. They would generally offer improvement over the existing situation with respect to both improved sight lines and improvements to the approach roads. Entry radii, entry path deflection and other design parameters would all be compliant with standards. The scheme has been the subject of a full independent Safety Audit, again as required by current standards, and a further review by the overseeing organisation. Safety features such as high grip surfacing, improved advanced signage, rumble strips etc. would be applied, as appropriate, to approach roads.

8.159 Old Aston Hill can currently be entered and exited from both ends. The scheme proposals would not change this. The distributor road was incorporated into the scheme proposals after comments received from many of the residents of Old Aston Hill. Its provision would remove future traffic flows from Old Aston Hill and is therefore fully supportable on both traffic and economic grounds.

8.160 The emergency services have been consulted about the connection to Old Aston Hill, in response to suggestions that it should be made a cul-de-sac at its northern end. There is not enough room to create a full turning area suitable for emergency vehicles and delivery lorries, without additional land take from residential properties. The use of Old Aston Hill as a short cut is considered highly unlikely as this would be a considerably longer and slower route. The Aston Distributor Road would be a far more attractive route to traffic.

8.161 Flintshire CC would intend to impose a 40 mph limit from Ewloe down to the junction with Old Aston Hill on the Aston Distributor Road, and a 30 mph limit from there to the roundabout adjacent to the Plough Inn. These speed limits are considered appropriate to the nature and use of the road.

8.162 The proposed distributor road would be at or slightly below the natural ground level in these fields. Its visibility would be reduced as the proposed planting shown in the Environmental Masterplan develops. Introducing earth banks as described would require significant additional land take, contrary to one objective of the design. Shaping the banks at a gradient which fitted into the landscape without becoming an intrusive feature themselves would increase the land take still further. The proposed hedgerow would integrate with landscape without requiring such land take.

8.163 The acoustic fencing as proposed would be provided to attenuate noise so that a reduction in existing noise levels would be achieved. The visual impact of the distributor road would be reduced as the proposal planting shown in the Environmental Masterplan develops. The Environmental Statement Volume 2 Part 6 drawings show that properties on Old Aston Hill would experience a reduction in noise if the proposed scheme is constructed.

8.164 At this stage the density of planting and species mixtures have not yet been designed. Screening would be a major consideration in the detailed design. To minimise light pollution the lighting intensity would be designed to be the minimum level consistent with current highway safety standards. Modern 'cut-off' lanterns would be used to minimise the spillage of light beyond the road surface.

Mrs J Hough (objection No. 1613)

Additional points are: -

8.165 To minimise property demolition the proposed route has been positioned in non-residential areas wherever possible. This would place the route further from the majority of the houses which currently front on to the existing trunk road. Unavoidably, the new scheme would move traffic closer to a small number of houses. The effects of this movement have been mitigated as far as possible within the existing constraints.

8.166 There is currently no statutory or procedural requirement to carry out a Health Impact Assessment for highway schemes in Wales.

8.167 The Environmental Impact Assessment, which is a statutory requirement under the Highways (Assessment of Environmental Effects) Regulations 1999 and Directive 85/337/EC, as amended by Directive 97/11/EC, covers many factors relating to a highway scheme which could have an impact on health, in a way which is structured, systematic and tested. The findings of

this assessment are presented fully in the Environmental Statement which has been published alongside draft Orders under the Highways Act 1980 for scrutiny by the public and by statutory and non-statutory bodies.

8.168 The current 50 mph speed limit that applies to part of the existing route was introduced due to increasing traffic volumes with associated safety concerns. These concerns emanated from the many substandard features exhibited by the existing route. All of these features and the many others would be addressed by the proposed scheme so the need for the existing 50 mph speed limit would be removed.

8.169 The scheme as now proposed is of the same scale as that presented for public consultation in 1992. The numbers of lanes and the land take required for the main carriageway works are as proposed at that time. Increases in the scale of the scheme are restricted to the addition of the Aston Distributor Road and the A55 Connector Road, both of which have been introduced in response to comments received from considerable numbers of the public.

8.170 The distances between the Plough Lane junction and the Interchanges at St David's Park and Queensferry are well below current design standards and Plough Lane junction could not safely remain open. Provision would be made for traffic which currently uses this junction via the main carriageway and Queensferry Interchange and via the proposed Aston Distributor Road and Aston Road.

8.171 It would not be possible to accommodate a northbound off slip to St David's Park Interchange safely as part of the current scheme due to the proximity of the A55 Ewloe Interchange and the lack of adequate weaving lengths. A replacement for this facility is proposed as part of the next phase in the improvement programme.

8.172 The footpath crossing alongside the Wrexham–Bidston Railway line and the link down to Old Aston Hall Lane are essential links in the local footpath network and have to be provided as replacements for the existing subway and the existing at-grade crossing of the A494. It is Welsh Assembly Government policy to encourage walking and cycling and these links must be provided to maintain access across the trunk road. There would be an alternative route across the road via the Plough Lane overbridge for anybody who would not wish to use the path alongside the railway, but that may add over 1 kilometre to any single journey.

8.173 It is very unlikely that traffic could be encouraged to use the M53/A55 route as an alternative since journey costs (time and money) would be greater.

Mrs J Williams (objection No. 1122)

Additional points are: -

8.174 Emissions from vehicles are reducing over time as the older more polluting vehicles are scrapped and replaced by cleaner modern vehicles. The introduction of alternative fuels and hybrid vehicles will also contribute to a reduction in pollution levels. The ES indicates that the proposed scheme would have a slight overall benefit in air quality for residents within 200 metres of the route. Many of the properties currently worst affected by the road would receive a benefit from the proposed scheme. The rate of decline in some pollutant levels would be slower if the scheme is built, primarily due to the anticipated increase in traffic speed being used in the air quality modelling.

8.175 The scheme would include noise barriers and low noise surfacing as part of the design. The final details of these would be subject to approval by the local planning authorities. Consequently, if the scheme goes ahead, noise levels at the objector's property are predicted to remain unchanged in the opening year, 2010. The scheme is predicted to result in a small decrease in accident numbers.

8.176 It is not possible to accommodate a northbound off slip to St David's Park Interchange safely as part of the current scheme. A replacement for this facility is proposed as part of the next phase in the improvement programme. The distances between the Plough Lane junction and the interchanges at St David's Park and Queensferry are well below current design standards and Plough Lane junction could not safely remain open. Provision would be made for traffic which currently uses this junction via the main carriageway and the Queensferry Interchange and via the proposed Aston Distributor Road and Aston Road.

8.177 Even if all of the long distance traffic transferred to alternative routes, whether via the A55 Chester Southerly Bypass or the A548 (Flintshire Bridge) it would not remove the need to improve the A494 through Queensferry.

Mr P Buchanan (objection No. 570)

Additional points are: -

8.178 Recent traffic forecasts show that even if local business and residential growth were to be low, the flow on the Aston Hill section would increase to 68,000 vehicles per day by 2010, without the proposed scheme. The most likely pattern of growth, the Central Growth forecast, is that traffic will grow to 70,000 vehicles per day by 2010 and 84,000 by 2025. Without additional capacity, free flow conditions would break down and at this point the

capacity of the road falls significantly and stop/start conditions would occur.

8.179 It is not possible to safely accommodate a northbound off slip to St David's Park Interchange as part of the current scheme due to the proximity of the A55 Ewloe Interchange and the lack of adequate weaving lengths. However, a replacement for this facility is proposed as part of the next phase in the improvement programme. Following the 2006 public consultation a connector road has been added to deal with traffic from the A55 Chester Southerly, which accounts for around 46% of the vehicles using the existing slip road.

8.180 The Assembly Government has consulted widely during the preparation of this scheme. During 1992, the public were invited to express their views on the proposals to improve the A494 between the River Dee and Ewloe Roundabout junction. Following consideration of all the submissions made to him, the then Secretary of State for Wales decided that the Blue Route (on-line widening) should be adopted as the Preferred Route.

8.181 There have been two recent Public Exhibitions (July 2006 and January 2007), both preceded by presentations to elected members of the Community, Town and County Councils together with Assembly Members. At these exhibitions the details of the scheme were presented and the public have had the opportunity to discuss issues with members of the Project Team. Where appropriate, comments from the July 2006 exhibition were incorporated into the draft Orders published in December 2006.

Mr D Mackie (objection No. 1881) & Mr B Miller (objection No. 614)

Additional points are: -

8.182 The Welsh Assembly Government created a 'Sustainable Development Action Plan' in line with the requirements of the National Assembly's 'Sustainable Development Scheme'. The Action Plan is how the Assembly Government would implement the commitments in the new scheme. Under the section 'Liveable Places – Strong Communities' it is stated that a strong framework is already in place to enable communities to develop more sustainability including, among other things, a Transport Framework routed in principles. The Trunk Road Forward Programme, which includes the A494 Drome to Ewloe Improvement, was created in accordance with this.

8.183 The World Health Organisation (WHO) has set a guideline for PM_{10} of 20 $\mu g/m^3$ as an annual mean, but has not set a target year. However, the WHO publication 'Air Quality Guidelines – Global Update 2005' also states that 'The standards set in each country will vary accordingly to country-specific approaches toward balancing risks to health, technological feasibility, economic considerations, and other political and social factors.'. The UK Air Quality objectives for PM_{10} are 40 $\mu g/m^3$ as an annual mean and a 24-hour mean of 50 $\mu g/m^3$ that should not be exceeded more than 35

times per year.

8.184 The WHO guideline would be exceeded at 5 sensitive receptors with the proposed scheme in 2010, compared with 3 exceedences without the proposed scheme, but not exceeded in 2025. The background concentration is 18.1 µg/m^3 as an annual mean, so it is within 10% of this guideline. However, this guideline is not applicable to the assessment as it is not a UK standard.

8.185 The provisional objectives were never in Regulations and as such have not been used as standards for reference with road schemes in the UK. The UK Air Quality objectives for England and Wales for PM_{10} are 40 µg/m^3 as an annual mean and a 24-hour mean of 50 µg/m^3 that should not be exceeded more than 35 times per year.

8.186 The provisional 2010 PM_{10} objectives have been replaced in the UK Air Quality Strategy 2007 by an exposure reduction approach for $PM_{2.5}$. The existing objectives for PM_{10} apply, these being an annual mean of 40 µg/m^3 and a daily mean of 50 µg/m^3 not to be exceeded more than 35 times in a calendar year. Therefore, the predicted PM_{10} concentrations at all receptors with or without the proposed A494 improvements are below the UK air quality objectives. The UK Strategy objectives define the level of pollution below which health effects are unlikely to be experienced even by the most sensitive members of the population (DMRB Interim Advice Note 94/07 – document DD60).

8.187 The predictions of PM_{10} concentrations have been undertaken using the appropriate guidance as outlined in the Design Manual for Roads and Bridges. This guidance has been approved for use in relation to road schemes by the Welsh Assembly Government. The PM_{10} emissions with the scheme in 2010 are predicted to be less that the emissions in the existing case.

8.188 The automatic traffic counters on Aston Hill show regular exceedence of the Congestion Reference Flow during peak hour. There is no evidence to suggest that this equates to the visible congestion in the vicinity of Ewloe. Forecast traffic figures, based on actual counts on Aston Hill, indicate that the flows on Aston Hill will be at 99% of the Congestion Reference Flow for this section of road in 2010. These forecasts are specific to this section and are independent of potential congestion issues elsewhere, e.g. at the Ewloe Interchange.

8.189 The number of lanes required for the main carriageway is assessed using the 'Congestion Reference Flow' (CRF). This is a calculated figure based on road type and environmental factors. The CRF for the existing dual carriageway has been calculated at 71,000 vehicles per day. This is already exceeded on a regular basis, leading to congestion.

8.190 The addition of a third lane in each direction increases the CRF to 106,000

vehicles per day. The predicted traffic flows in 2025 (the design Year) for the section between Queensferry Interchange and St David's Park interchange (Aston Hill) are in the order of 75 - 87,000 vehicles per day. Thus, the addition of a third lane is appropriate to service the expected future demand. Additionally a 4th lane, southbound up Aston Hill, is necessary to accommodate slow moving traffic created by the very long (1.8 kilometres) and steep (up to 5.44%) uphill gradient.

8.191 Guidance from DMRB, TA 46/97, indicates that the maximum opening year flow for an all-purpose two-lane dual carriageway is 39,000 vehicles AADT. The traffic flow on the existing carriageway was 63,000 vpd (at end 2006) and under the above standard would require either a 3 or 4 lane motorway.

Mr J Maloney (objection No. 1879)

Additional points are: -

8.192 The proposals have been designed to Rural All Purpose Dual Carriageway Standards in accordance with the Design Manual for Roads and Bridges, with a Departure from Standard granted to incorporate hard shoulders.

8.193 Motorway design standards are considerably more onerous than those for a rural all purpose dual carriageway. The differences include more extensive taper and nosing lengths at junctions for motorway standards resulting in greater land take requirements, a requirement for greater weaving lengths between junctions, different lining and signing requirements and differences in the cross-section of the carriageway. The adoption of all purpose dual carriageway standards has allowed a more constrained scheme to be developed, thus minimising impact on land take.

8.194 The proposed scheme would bring the road approximately 21 metres closer to 20 Moorfield Road. Noise modelling for this property predicts that with the scheme, the noise level would be some 3.4 dB (A) lower in 2010 than without it. In 2025 there would be no difference between the Do Minimum and Do Something scenarios, but the noise would still be lower than in the 2010 Do Minimum scenario. The introduction of low-noise surfacing and substantial earth mounding with timber noise barriers would be the main reasons for this.

8.195 The footpath crossing alongside the Wrexham–Bidston Railway line and the link down to Old Aston Hall Lane are essential links in the local footpath network and have to be provided as replacements for the existing subway and the existing at-grade crossing of the A494. It is Welsh Assembly Government policy to encourage walking and these links must be provided to maintain access across the trunk road. There would be an alternative route across the road via the Plough Lane overbridge for anybody who would not wish to use the path alongside the railway, but that would add a maximum of 1 kilometre to any single journey depending on origin and

destination. There would be no alternative route to the south of the railway.

8.196 The proposed footpath connection beneath the trunk road would pass beneath the road bridge which would be approximately 57 metres wide at that point. The bridge would carry 7 lanes of trunk road traffic plus the 2-lane Aston Distributor Road. As the path would be within the existing railway cutting which is substantially wider and deeper than the subway that it would replace, there would be significant natural light during daylight hours to reduce the sense of enclosure. At night, directed lighting would illuminate the path.

8.197 The Aston subway was originally installed to reduce the severance created by the original trunk road construction. This subway remains the only practical pedestrian route between the community in Moorfield Road, Mountfield Road, Aston Mead, Lower Aston Hall Lane and the area of Aston which lies west of the trunk road. For this reason the proposed footpath connection across and alongside the Wrexham – Bidston railway and alongside the trunk road to Lower Aston Hall Lane is considered particularly important if the community is not to be divided further. With the pedestrian link, the community would not be divided any more than it is at present.

8.198 There are factors which have been taken into account in assessing the need to provide a replacement facility. There are alternative routes for the Chevrons Road Bridge and the cost and practicality of providing a simple footpath alongside the railway at Aston is not comparable with the high cost of a replacement bridge at Chevrons Road.

8.199 The proposed footpath route would be less attractive to individuals intent on criminal activity than the present Aston subway or the existing railway embankment, because the proposed route would be more open in cross-section than the existing Aston subway, and therefore more readily open to observation.

8.200 The scheme proposals include significant measures which would provide increased segregation and protection to properties. The existing carriageway has very few measures that provide segregation or vehicle restraint, consisting of limited safety barrier and pedestrian guard railing.

8.201 The Contractor would follow the regulations for work with asbestos that would be current at the time of demolition. Personnel with appropriate training and equipment would carry out the work in a safe and approved manner.

Mr E Armstrong-Braun (objection No. 1885)

Additional points are: -

8.202 The north-eastern part of Aston, in the vicinity of the Chevrons Road footbridge, is currently separated from the nearest part of Mancot by approximately 700 metres of farmland. The alternative routes have been assessed in relation to the routes that walkers are likely to use. Whether making a specific journey or a circular recreational walk, few people are likely to return to the location of the existing bridge before continuing their walk.

8.203 The alternative routes provided would be a) via the Queensferry Interchange where existing and revised footbridges would link from the bottom of Gladstone Way to the town centre, and b) via the Plough Lane Bridge which links footpath 30 from Mancot to Aston at The Plough. Two journeys have been used as examples to compare the existing route with the alternatives. Both used the intersection of Clay Lane, Gladstone Way and Colliery Lane as a point passed on likely journeys including those to the southern end of Willow Park.

8.204 The alternative routes via the Interchange would add some 365 metres and 72 metres respectively to these journeys. The DMRB defines increases in journey length of 250 – 500 metres as 'moderately adverse', and those of up to 250 metres as 'slightly adverse'. The alternative routes would add a greater distance to recreational walks from Dee View to areas of countryside, either via Queensferry Interchange to the fields and permissive paths at the bottom of Gladstone Way or to the Plough Lane Bridge and Footpath 30. For active walkers the additional distance is considered to be of minor inconvenience. For the less able the additional distance to these areas would be of more significance, however the less able walkers would be more likely to find the steps on the existing bridge to be a difficulty. The provision of a replacement bridge with ramps would not offer a reduction in journey length over the alternatives.

8.205 The proposed new path linking the bottom of Gladstone Way to the truncated western end of Clay Hill Lane would create a new circular walk taking in Footpath 28. This route would provide a new opportunity for relatively short circular walks. Longer circuits would be available via footpaths 29 and 30.

8.206 A replacement bridge in this vicinity would be required to span Aston Road, the northbound off-slip and diverge taper, the six lanes and hard shoulders of the A494, and the southbound on-slip with merge taper. The span would be some 85 metres. The structure would require a minimum clearance of 5.7 metres above the highest point on the carriageway. As the A494 would be raised above existing at this point to improve the vertical alignment, this would mean that the footbridge would be about 8 metres above Aston Road. The cost of a new bridge is estimated to be in the region of

£800,000.

8.207 The existing footbridge has a limited degree of use, an average of 43 per day in the summer period, and 32 per day in the winter. This use is spread evenly through the day, with no morning or afternoon peaks. The pattern of use recorded in May and June 2007 did not indicate significant peaks on any one day of the week. Occasional use of the route by arranged groups of walkers would constitute approximately half of that day's use, and would be included in the use shown in the surveys. The surveys conducted to establish the degree of use of the existing bridge began in 1995-6 as set out in the ES Volume 2 Part 7 section 3.5. Further surveys ran from November 2005 to October 2006, and these are also shown in the ES. Pedestrian counts from May to June 2007 provided further confirmation of these results.

8.208 Users of the proposed alternative route would cross the interchange using the existing elevated footbridges/walkways. To reach them, pedestrians would have two additional road crossings to make, linked by segregated footways. The provision of appropriate pedestrian crossing facilities at both these locations would be considered at the detailed design stage. It is anticipated that a central refuge would be provided on Gladstone Way, subject to agreement with Flintshire County Council.

8.209 The alternative routes would involve walking alongside Aston Road, but not the new trunk road. The routes would also cross the Queensferry Interchange. Exposure would be for relatively short periods. The concentrations of pollutants in this area are predicted to be no more than three-quarters of levels set in UK Air Quality Strategy guidelines to protect the health of the most sensitive members of the population.

8.210 The exposure to noise when using the alternative routes would be more prolonged than it would be for users of a new, longer footbridge which crossed the trunk road directly. However, Aston Road would be separated from the trunk road by a noise barrier and landscape strip which would reduce the noise exposure significantly. The noise alongside Aston Road would be substantially lower than the Do Minimum (existing) noise level at Chevrons Road Bridge.

8.211 The existing Chevrons Road Bridge has 5.7 metre clearance over the existing A494. This is the minimum requirement. The proposed trunk road carriageway would be at a higher elevation at this point and so no part of the existing pedestrian bridge over the dual carriageway could remain as it would not provide sufficient clearance. Many or all of the supports would require relocation to suit the proposed highway layout.

8.212 The guideline gradient for access ramps suitable for wheelchair and other less-able users is 1 in 20, with the provision of horizontal rest areas at every 10 metres. The present land gradient would shorten 'uphill-facing' ramps but extend 'downhill-facing' ramps. The alternative would be to form

a zig-zag. The most convenient of these options has been used in each case in the distances quoted in paragraph 8.204 above.

Mrs S Clamp (objection No. 325)

Additional points are: -

8.213 The Environmental Assessment has been conducted in accordance with DMRB to predict the concentrations likely to be experienced at properties and by the population within the surrounding area. These concentrations have been compared with UK air quality objectives, and the results are presented in the ES on this basis. The concentrations of airborne pollutants remain below the UK and EU legislation guideline concentrations set for the protection of human health and will continue to decline. The UK strategy standards 'define the level of pollution below which health effects are unlikely to be experienced even by the most sensitive members of the population'.

8.214 The Environmental Statement (ES) and Flintshire County Council's own Air Quality Assessment demonstrate that there are currently no exceedences of any of the existing UK or EU air quality standards and forecasts indicate that there will be no exceedences of any of these standards in 2010. By 2025 the air quality will continue to meet these existing standards, whether or not the proposed scheme is implemented. The 'Provisional Standard' for 2010 has been withdrawn. Subsequent references to the '2010 standard' are therefore not relevant.

8.215 The traffic flows and speeds used in the air quality modelling are derived from the traffic model, and show the average speeds expected under each of the Do Something and Do Minimum scenarios. In the current situation (2010 DM) the effect of the existing 50 mph speed limit on parts of the route is taken into account in the traffic model. While any change to existing speed limits is not part of the draft Orders for the scheme and would be subject to a separate legal process, the ES modelling takes the removal of this speed limit into account to examine the 'worst case'.

8.216 Comparison for 2025 emissions without the scheme is given in the ES Volume 2 Part 1 Table 1.17. This shows that, in comparison to the do minimum case, the do something case would result in a reduction in carbon monoxide of 4.5%; a reduction in THC of 10.7%; an increase in NO_x of 17.1%; an increase in PM_{10} of 40.9% and an increase in carbon dioxide of 15.1%. This impact would equate to 0.078% of the total emissions in Flintshire. On the regional level the impact would be minor. The non-technical summary indicates that by 2025 the emissions of CO and hydrocarbons from traffic using the proposed scheme would be lower than for the do minimum option, because of substantial congestion in the latter case which raises emission rates for these pollutants. Emissions of NO_x, PM_{10} and CO_2 would be higher with the proposed scheme. The proposed scheme would allow vehicles to travel at the national speed limit for more

of the time. It also states that on the regional assessment the predicted increases in the main traffic-generated pollutants, namely NO_2, PM_{10} and CO_2, indicated that the impact of the proposed scheme would be moderate, adverse.

Mr J Butler (objection No. 310)

Additional points are: -

8.217 Consultations with the North Wales Police (NWP) began some years ago to ensure that the facilities required by the Police can be included in the scheme. Sufficient land needs to be included in the draft CPO for their facilities. The specific requirements include 2 Police Observation Platforms – the location of these has also been agreed with NWP; 1 lay-by for the use of the Automatic Number Plate Recognition (ANPR) camera team, again at a location agreed with NWP; 1 large load lay-by to be used by abnormal loads.

8.218 NWP supports the provision of the hard shoulders on road safety grounds and the removal of the 50 mph speed limit. This opinion is confirmed in the letter dated 6th July 2007 (Annex 3 of document WAG/REB/310/1).

8.219 VOSA has been consulted on a regular basis since the introduction of the A55 Connector Road in August 2006. Prior to this addition the existing weighbridge facility would not have been affected. This consultation process is confirmed in an e-mail dated 23rd August 2007 attached in Annex 3 of document WAG/REB/310/1. The information on consultation given to Mr Butler may have been due to internal communication misunderstandings.

8.220 There is currently no statutory or procedural requirement to carry out a Health Impact Assessment for highway schemes in Wales.

8.221 The Environmental Impact Assessment, which is a statutory requirement under the Highways (Assessment of Environmental Effects) Regulations 1999 and Directive 85/337/EC, as amended by Directive 97/11/EC, covers many factors relating to a highway scheme which could have an impact on health, in a way which is structured, systematic and tested. The findings of this assessment are presented fully in the Environmental Statement which has been published alongside draft Orders under the Highways Act 1980 for scrutiny by the public and by statutory and non-statutory bodies.

8.222 Factors considered to be the determinants of Health and Well-being are listed in the published guidance provided in 'Improving Health and Reducing Inequalities – A practical guide to health impact assessment' September 2004 Appendix 1' which was produced by Welsh Health Impact Assessment Support Unit. They are: -

- Lifestyles;

- Social and community influences on health;
- Living/environmental conditions affecting health;
- Economic conditions affecting health;
- Access and quality of services;
- Macro-economic, environmental and sustainability factors.

8.223 A number of items in the guidance are related to highway schemes and have been assessed within the Environmental Statement, as shown in Table B1 in document WAG/REB/310/1. The remaining items are considered to have minimal impact as a result of this particular scheme. The Environmental Statement provides quantitative data of the effects of the proposed scheme on the environmental factors noted in the table or, where quantitative measures are not possible, it provides qualitative assessments of those effects. In the case of noise, air quality and water quality the assessment uses nationally agreed standards, guidelines and methods such as those in the DMRB against which the predicted effects are judged.

8.224 None of the predicted effects would lead to environmental conditions exceeding guidelines set to protect human health, and in many cases the proposed scheme would result in conditions better or no worse than those that would apply in the absence of the scheme.

Mrs S Bunnell (objection No. 775)

Additional points are: -

8.225 The number of lanes required for the main carriageway is assessed using the 'Congestion Reference Flow' (CRF). This is a calculated figure based on road type and environmental factors. The CRF for the existing dual carriageway has been calculated at 71,000 vehicles per day. This is also calculated on an hourly basis for the existing dual carriageway, this is 1,800 vehicles per lane per hour. These figures are already exceeded on a regular basis, leading to congestion. The addition of a third lane would be appropriate to service the expected future demand. Additionally a 4th lane, southbound up Aston Hill, would be necessary to accommodate slow moving traffic created by the very long and steep uphill gradient.

8.226 Additional local traffic would not be moved on to the side roads.

8.227 Even if all of the long distance traffic could be persuaded to transfer to an alternative route via the A548 (Flintshire Bridge) it would not remove the need to improve the A494 through Queensferry in the medium term.

8.228 There would be no discernible benefit to the A494 from the suggested upgrading of the footbridge at Saltney Ferry. The alternative route would also require traffic to use Sandycroft Road which is already congested at peak times. The suggested alternative route is not an alternative to the proposed scheme and would not remove the need to improve the A494 through Queensferry.

8.229 The effects of the proposed scheme on factors which could influence health (air quality, noise, access to exercise and recreation, access to health facilities) would generally be beneficial as shown in the Environmental Statement. In particular, the concentrations of airborne pollutants would remain below UK and EU legislation guideline concentrations set for the protection of human health and will continue to decline.

8.230 For many of the properties currently most affected by traffic noise, the noise would be reduced due to the provision of noise barriers and low-noise road surfacing materials.

8.231 There would be an alternative route across the road via the Plough Lane overbridge for anybody who would not wish to use the proposed path alongside the railway, but that might add over 1 kilometre to any single journey.

8.232 The use of public local transport was considered in depth in the Queensferry Transportation Study of 2000. The study concluded that improvements to public transport would have a negligible impact on traffic flows on the A550 and A494 and therefore were not worth pursuing further as alternatives to the highway improvement schemes.

8.233 The project has been evaluated against Low Growth, Central Growth and High Growth forecasts. Even at the lowest rate of forecast traffic growth, the need for the scheme is demonstrated.

Mr & Mrs A Ellis (objection No. 968)

Additional points are: -

8.234 The proposed scheme would have very little effect on Riverside Park, as it is some 500 metres from the limits of the scheme. The forecast difference in traffic north of Queensferry in 2025 is an increase from some 84,800 AADT without the scheme to around 87,200 with the scheme. The predicted increase in traffic flow past Riverside Park (approximately 3% in 2025) would have no perceptible effect on traffic noise. The nearest selected sensitive receptor modelled in the ES (located at Claremont Avenue) would experience slightly higher concentrations of NO_2 and PM_{10} with the scheme than without, but in either case the concentrations would be lower than in 2005 and lower than the UK air quality objectives.

8.235 The existing A494 has a 50 mph speed limit on the northbound carriageway as far north as the Chester – Holyhead Railway line. From this point northwards the national speed limits apply. On the southbound carriageway near Riverside Park the national speed limit is replaced by temporary restrictions to allow the safe merging of traffic lanes onto the River Dee Bridge, where a 50 mph speed limit applies.

8.236 Removal of the 50 mph speed limit would lead to an increase in the maximum speed of vehicles within the sections currently restricted, although as HGVs are increasingly governed by speed restrictors the speed of these vehicles would not increase significantly. Any change in the speed of vehicles passing Riverside Park would apply to vehicles on the southbound carriageway where the temporary merging arrangements are in force.

Mr T Sleeman (objection No. 1878)

Additional points are: -

8.237 There was no preferred route for the next phase of the improvement programme between Ewloe and Northop at the time the drawings for the proposed scheme were prepared, so it was not possible to include the proposals on any of the plans. It has been made clear that further improvements are planned to the west of the current scheme. The improvement to the north of the River Dee has been complete since 2004 so it is not necessary to make a specific reference to it as no further changes are planned in this area.

8.238 The Non-Technical Summary (NTS) document is a summary and cannot therefore include everything. This accordingly applies to the plan referred to. There is a reference in the introduction to this document that improvements are planned as far as Northop on the A55. Many of the features referred to are shown on the plan in the NTS but not labelled due to lack of space. All those close to the road are however shown in greater detail and labelled accordingly on the scheme plans included as part of the full Environmental Statement and full account has been taken of them in the preparation of this scheme.

8.239 There have been two Public Exhibitions, in July 2006 and January 2007. The details of the scheme have been presented at these exhibitions and the public have had the opportunity to discuss issues with members of the Project Team. There was considerable publicity of the events prior to both exhibitions.

8.240 Even if all of the long distance traffic could be persuaded to transfer to an alternative route via the A548 (Flintshire Bridge) it would not remove the need to improve the A494 through Queensferry in the medium term.

Mrs D Butler (objection No. 1882)

Additional points are: -

8.241 The percentage of HGVs on the A494 route is between 7% and 8% dependant upon which section of the route is being considered. National averages for this type of road are between 7% and 12%. The HGV percentage on this route is within the range of the national averages.

8.242 The traffic composition used in calculations for air quality is consistent with the actual percentage of HGVs using the route. Similarly, in calculations for congestion, actual percentages of HGVs using the route are taken. Conclusions drawn on this data are therefore reliable.

8.243 The current 50 mph speed limit that applies to part of the existing route was introduced due to increasing traffic volumes with associated safety concerns. These concerns emanated from the many substandard features exhibited by the existing route. All of these would be addressed by the proposed scheme so the need for the existing 50 mph speed limit would be removed.

8.244 Extensive traffic modelling work has been carried out on this corridor since 1989. The various forecasts have been found to compare extremely well with actual traffic counts. The traffic forecasts used in the scheme proposals are based on data obtained from surveys undertaken in October 2005. Additionally, other data sources from the past 5 years have been integrated and utilised where appropriate. More recent surveys have been undertaken at specific locations to verify specific issues, the most recent of these being in May of 2007. The traffic model is therefore based upon the most current information. These surveys included counts of both Heavy Goods Vehicles and other road users.

8.245 Forecast traffic demands are based on the methods set out in the Traffic Appraisal Manual using the National Road Traffic Forecasts and existing traffic count data. These consider a range of national and local factors including economic growth, regional and local planned developments and other transport schemes. The forecasts are carried out for ‘Low Growth’, ‘Central Growth’ and ‘High Growth’ scenarios to cover a range of possible future conditions. Even if the only the “low growth” demand occurs the proposed improvement scheme is still needed.

8.246 Modelling indicates that the proposed scheme would generate an increase in CO_2 emissions over the relevant section of the A494, amounting in 2025 to some 0.078% of the total emission in Flintshire. However, increasing congestion without the scheme would lead to more ‘stop-start’ traffic and more switching to longer alternative routes, and so the actual increase could be less than that modelled. Effective reduction in CO_2 emissions would require a more fundamental change in society’s use of energy, including the decisions over when and how much to travel.

8.247 The proportion of HGVs travelling along the A494 through the Aston Hill area with a destination to or from Holyhead is fairly low; the maximum average number of HGVs using the A494 and Aston Hill and proceeding to or from Holyhead is about 570 vehicles. There would be a maximum of 9% of goods vehicles on Aston Hill which would be travelling to or from Holyhead. The perceived problems and risks associated with HGV traffic would not be as a consequence of the scheme. With or without the proposed scheme, traffic volumes would continue to increase. Those agencies within Wales who are charged with control of vehicle operating standards will continue to enforce the relevant legislation to ensure that the vehicle fleet improves to meet those standards.

8.248 Transfer of freight to the railways was considered in the Queensferry Transportation Study. The Study concluded that the introduction of further rail freight is likely to induce some switch from road to rail – but absolute numbers are unlikely to be significant.

8.249 The preferred layout for addressing traffic problems at the Ewloe Interchange and improvements on the A55 between Ewloe and Northop was announced by the Minister for Economy and Transport on 13th September 2007. The announcement has been made following a public consultation which took place between 16 May and 11 July 2006 together with a public exhibition between 22nd and 25th May 2006. The announcement was made as soon as the Minister had received all information relating to the scheme and was in a position to make a decision.

8.250 The public have been consulted via two exhibitions and their views arising from these have resulted in changes being made to the proposed scheme. The most notable changes that have been made include the addition of the Aston Distributor Road and the addition of the A55 Connector Road.

Mr B Perrett (objection No. 1884)

Additional points are: -

8.251 The new technologies have to meet ever more stringent European standards, so they have to perform better than the old technologies. New Euro standards (Euro V) are due to be introduced for all new HGVs from October 2008. The emission standards for particulate matter are less than 6% of that for the Euro I standard that was introduced in 1992. Particulate traps have been designed to use a number of methods to reduce the temperatures required to regenerate the traps, so this would not need to be done when the engine is running at a high load.

8.252 It has been assumed that there would be no motor vehicles using alternative fuels in the model.

8.253 The need for the closure of the Plough Lane junction has been determined on the basis of engineering standards. The distances between the Plough

Lane junction and the interchanges at St David's and Queensferry are well below current design standards and Plough Lane junction could not safely remain open. The diverted local traffic would transfer to either the St David's or Queensferry Interchanges.

8.254 All roads which would be affected by the scheme have been included in the COBA assessment for accidents and as a consequence any likely changes in accidents associated with changes in traffic flows have been included.

8.255 The economic assessment has been carried out in line with Welsh Assembly Government guidelines. These do not include an assessment of any change in housing values.

8.256 COBA accident rates are based on national average rates that have been observed over the past thirty years. COBA accident rates are updated regularly to take account of changing trends in accidents. COBA accident rates are provided for different road types and for different speed groups. For dual carriageway roads it uses differential rates for speed limits below and over 50 mph.

8.257 The average accident rate on the mainline A494 as a whole is very close to the national average. Consequently it would not be expected that significant accident benefits would arise from this scheme. There are accident clusters around junctions and there is a small improvement at these locations as a result of the scheme.

8.258 Removal of 15 % of the traffic from the A494 would reduce the 2025 AADT figure to less than 71,000. Purely in traffic terms, therefore, this would remove sufficient traffic to ensure that the A494 was operating within capacity until 2025, the design year. However this would not remove the need to improve the A494. In order to remove even 15% of traffic from the A494, an alternative link would need to be constructed of sufficient standard to attract this volume of traffic.

8.259 The A55 Chester Southerly Bypass could only attract a maximum of 10% of the traffic due to it's significantly longer route (an additional 8.5km) and corresponding increases in journey time. Simple construction of a link from Kelsterton to Northop between the A548 and the A55 would attract a maximum of 13% of traffic from the A494 corridor, thus providing insufficient relief to the A494 to avoid the need for improvement.

8.260 The only possible alternative that could attract the necessary volume of traffic would be the full grade separation of all junctions and interchanges from Deeside Park to Northop to provide a free flow route between these points. Cost estimates for such an improvement are in the order of £140m. Additionally, the benefits provided by this solution in terms of journey time savings, accidents savings and maintenance savings result in a benefit to cost ratio of 1:1.7. The BCR of the proposed scheme is 1:2.5, showing a significantly better return.

8.261 Additionally there would be significant work required on the A494 including the repairs or replacement of The River Dee Bridge, The Queensferry Interchange and the Wrexham to Bidston Railway. The carriageway will also require replacement within the next 5 to 7 years. These maintenance operations would require significant and lengthy lane restrictions and some full road closures. Diversion of 26% of traffic onto an alternative route would defer the need to improve the A494 Drome Corner to Ewloe to a future date. It would not remove the need for future widening works to the corridor.

Mr I Frost (objection No. 560)

Additional points are: -

8.262 The traffic flows on this section of the A494 predominately have a local origin or destination. Approximately three-quarters of the traffic using the A494 falls into this "local" category and as such cannot transfer to alternative routes. It is not the intention that this improvement should allow free-flow conditions just for through traffic, with local traffic moved on to other roads. The improvement of the A494 would directly improve travelling conditions for all users of the route, the majority of who are local.

8.263 Between the Plough Inn and the Old Aston Hill junction, the Aston Distributor Road (ADR) is located on the line of the current north bound carriageway. Traffic flows on this existing carriageway (one way only) are currently approximately 31,000 vehicles (AADT). The central growth forecast flows (two way) on the ADR are 4,650 AADT in 2010, rising to 5,630 AADT in 2025. The flows on this section immediately in front of the existing houses would therefore be considerably reduced. The properties in this area would also benefit from the noise fencing which is proposed between the ADR and the new north-bound carriageway.

8.264 The scheme would result in an improvement in the traffic flow at the Queensferry Interchange despite the additional traffic flow transferred from the Plough Lane junction. Congestion at the existing roundabout at Queensferry is caused by a lack of capacity on the side roads leading away from the junction and in particular the capacity of the traffic signals at ASDA and MAKRO. Agreement has been reached with Flintshire County Council over ways in which the B5129 route can be improved on both sides of the Queensferry roundabout. The Welsh Assembly Government has agreed to fund the agreed works. The physical works and traffic signal improvements to the B5129 would assist the through flow of traffic around and away from the Queensferry Roundabout.

8.265 Three arms of the roundabout would be above the ideal operational capacity (Roundabout Flow Capacity (RFC) of 0.85) in the pm peak period, by 2025. However, if the scheme were not to proceed, three of the arms would be above the ideal operational capacity in the am peak and four of the arms would be above the ideal operational capacity in the pm peak, by

this time. The proposed scheme would therefore offer an improvement to the Queensferry Interchange.

8.266 The addition of a third lane in each direction would increase the CRF to 106,000 vehicles per day. The predicted traffic flows in 2025 (the design Year) for the section between Queensferry Interchange and St David's Park interchange (Aston Hill) are in the order of 75 - 87,000 vehicles per day. The addition of a third lane would therefore be appropriate to service the expected future demand. Additionally a 4th lane, southbound up Aston Hill, is necessary to accommodate slow moving traffic created by the long and steep uphill gradient. Hard shoulders are proposed to assist in the removal of accidents and breakdowns from the main vehicle flow, and to assist in the maintenance of the highway.

8.267 The distances between the Plough Lane junction and the junctions at St David's and Queensferry are well below current design standards and Plough Lane junction cannot safely remain open. Departures in vertical curvature and stopping sight distance, together with the steep gradient of Aston Hill on the main carriageway would make the provision of a junction at this location unacceptable to the Welsh Assembly Government on safety grounds.

Mrs M Frost (objection No. 584)

Additional points are: -

8.268 The traffic problems on this part of the corridor are caused by a lack of capacity on this particular section of the route. The removal of the Shotwick Junction traffic lights will not affect the forecast traffic flows for northward and eastward traffic movements. The removal of the constraint of the Shotwick traffic lights will allow south and west traffic movements of traffic to move in an unrestricted manner into the Drome Corner/Ewloe section and will exacerbate the existing problem.

8.269 The current 50 mph speed limit that applies to part of the existing route was introduced due to increasing traffic volumes with associated safety concerns. These concerns emanated from the many substandard features exhibited by the existing route. All of these features would be addressed by the proposed scheme so the need for the existing 50 mph speed limit would be removed. Provision would be made for traffic which currently uses the Plough Lane junction, which serves the hospital, via the main carriageway and Queensferry Interchange, and via the proposed Aston Distributor Road and Aston Road.

8.270 There is no mechanism to force heavy goods vehicles to divert from the A494 to alternative routes. Signs are already in place on the M56 suggesting an alternative route to North Wales via the A55. Statutory restrictions (e.g. weight limit restrictions) would relate equally to HGV traffic which had a legitimate requirement to access the Queensferry and

Ewloe areas (deliveries to local business etc.) and so could not be applied.

8.271 HGVs are likely to use the quickest and most reliable route that involves the least number of roundabouts and junctions. The risk of errant vehicles leaving the carriageway would be significantly reduced by the proposed scheme. The provision of mounding and vehicle restraints systems to current standards combined with the increased distance between the road and properties would result in improved road safety.

Mrs C Gilogly (objection No. 40)

Additional points are: -

8.272 The proposals have been designed to Rural All Purpose Dual Carriageway Standards in accordance with the Design Manual for Roads and Bridges, with a Departure from Standard granted to incorporate hard shoulders. Motorway design standards are considerably more onerous than those for a rural all purpose dual carriageway. The adoption of all purpose dual carriageway standards has allowed a more constrained scheme to be developed, thus minimising impact on land take and permitting the retention of the maximum number of interchanges.

8.273 Demolition of some properties would be an unavoidable consequence of the scheme but it would be minimised. The majority of homes which would be affected were bought by the Assembly some years ago and have been let on short-term arrangements. Other properties are empty and not economically repairable.

8.274 Planning Policy for Wales issued in March 2002 sets out the land use planning policies of the Welsh Assembly Government. Within Flintshire County Council's Draft Unitary Development Plan (2003) the proposed scheme is recognised as a Safeguarded Road Scheme under Policy AC17.

8.275 It is not possible to differentiate between tourist traffic and commercial traffic on a route of this nature. The scheme proposals would deal with all traffic which would use the route. The Welsh Assembly Government recognises that the route is used by a large volume of mixed tourist traffic, commercial traffic and local traffic. All of this traffic would have to be accommodated by the scheme proposals.

8.276 A Preferred Route announcement has been made recently by the Welsh Assembly Government with respect to a scheme proposal at this location. This scheme would provide solutions to any traffic problems at Ewloe Interchange.

8.277 New drainage would generally be provided throughout the scheme unless existing drainage is in good condition and adequate. The drainage system would be designed for a 1:100 year storm together with 20% uplift to allow

for the possibility of changes in rainfall arising from global warming.

8.278 The Environment Agency Wales has been consulted regarding run-off entering existing lagoons and watercourses. The provision of additional attenuation ponds would ensure that outfall flows did not exceed present levels. A key element to the flood risk in the area is the ditch section of the Queensferry drain along Sandycroft Road. The proposed improvement scheme would provide additional outfall capacity to this section of watercourse.

Mr & Mrs J Henderson (objection No. 595)

Additional points are: -

8.279 The proposed scheme would maintain or improve many of the existing footpaths, particularly those that cross the trunk road (the pedestrian bridge at St David's Park, the crossing near the Wrexham-Bidston railway, the Plough Lane Bridge, the Queensferry Interchange, and Queensferry Subway). New routes for pedestrians and cyclists, separate from the trunk road, would be created. In particular, the new distributor road would provide a link from St David's Park Interchange to Queensferry which would avoid use of the trunk road. A further segregated pedestrian and cycleway route, partially alongside the trunk road, would link Queensferry to Garden City and to cycle paths alongside the River Dee.

8.280 The existing route across the Chevrons Road footbridge would be replaced by the existing route via Queensferry Interchange, which is of similar length between residential areas and the schools. The provision of pedestrian and cycle access in these ways would provide alternatives for direct journeys and recreational circuits, in accordance with Assembly policies to promote walking and healthy exercise.

8.281 Traffic volumes are forecast to increase, with or without the scheme. Growth in traffic volume is related to change in population, car ownership levels and the general prosperity of the area. National Road Traffic Forecasts published by the Department for Transport indicate that on this basis, local traffic flows would increase by about 28% between 2007 and 2025.

8.282 In general, the provision of additional capacity on a route might induce additional traffic in two ways; by causing traffic to divert away from alternative routes or to encourage new trips to be made that otherwise would not be made. In the case of this improvement, the potential for induced traffic has been considered and it has been concluded that there is no significant potential for it to occur. The vast majority of the traffic has a relatively local origin or destination and could not transfer to an alternative route. Long distance traffic is only a small part of the total traffic on the corridor, with only approximately a quarter of the traffic entering Wales at Deeside having a destination beyond Northop on the A55. The majority of

long distance traffic will already be using the A494 and there is little potential for a significant transfer of traffic from other routes to occur. The traffic growth that is forecast will come from increases in overall vehicle use, and from local developments which will require access from the A494.

8.283 The Environmental Statement, Volume 2, Part 6, presents the results of very detailed noise assessment work. This shows that for many of the properties currently most affected by traffic noise, the noise would be reduced due to the provision of noise barriers and low-noise road surfacing materials. Mr and Mrs Henderson's property is more than 400 metres from the scheme and as such is outside the study area; it is therefore considered that road traffic noise levels from the A494 would not significantly change.

8.284 Plough Lane junction currently forms part of the most direct route from the A494 to the Deeside Community Hospital. It is not an Accident and Emergency hospital.

8.285 The distances between the Plough Lane junction and the interchanges at St David's Park and Queensferry are well below current design standards and Plough Lane junction could not safely remain open. Provision would be made for traffic which currently uses this junction via the main carriageway and Queensferry Interchange and via the proposed Aston Distributor Road and Aston Road.

8.286 The scheme would result in an improvement in the traffic flow at the Queensferry Interchange despite the additional traffic flow transferred from the Plough Lane junction. Congestion at the existing roundabout at Queensferry is caused by a lack of capacity on the side roads leading away from the junction and in particular the capacity of the traffic signals at ASDA and MAKRO.

8.287 It would not be possible to accommodate a northbound off slip to St David's Park Interchange safely as part of the current scheme due to the proximity of the A55 Ewloe Interchange and the lack of adequate weaving lengths. However, a replacement for this facility is proposed as part of the next phase in the improvement programme.

9 CONCLUSIONS

9.1 Bearing in mind the submissions and representations I have reported, I have reached the following conclusions, reference being given in square brackets to earlier paragraphs where appropriate.

9.2 The scheme would provide the widening and re-alignment of some 4.25 kilometres of the A494 trunk road from Drome Corner to Ewloe in the County of Flintshire. It would include a new connecting trunk road and slip road between the A55 Ewloe Interchange and west of St David's Park Interchange, together with the widening and improving of a bridge over the river Dee between Queensferry and Garden City. The road would be widened to 3 lanes in both directions with the addition of a fourth, climbing, lane in the southbound direction.

9.3 Existing junctions with Old Aston Hill, Plough Lane and Clay Lane would be closed and a new distributor road constructed alongside the widened A494 between the St David's Park Interchange at Ewloe and Plough Lane. This would provide alternative 2-way access for traffic currently using these junctions. In addition, the northbound exit slip road from the A494 to the St David's Park Interchange would be closed and the proposed new connector road would provide access to the St David's Park Interchange for traffic from the A55. From the Queensferry Interchange to the northern end of the scheme the road would be widened to 4 lanes in each direction.

9.4 If I am to recommend that the Connecting Road and Slip Road Order is made, I need to be satisfied that, in accordance with Section 10(2) of the Highways Act 1980, having regard to local and national planning, including the requirements of agriculture, the scheme would be in the public interest. I need also to be satisfied that any adverse environmental impact would be proportionate, having regard also to the mitigation proposed.

9.5 With regard to the Side Roads Order, I need to be satisfied that alternative routes to highways proposed to be stopped up are reasonably convenient, and, where private means of access are to be stopped up, that another reasonably convenient access is available or, if required, would be provided.

9.6 If I am to recommend that the Compulsory Purchase Order be made, I need to be satisfied that

- there is a compelling case for acquisition in the public interest;
- that this justifies interfering with the human rights of those with an interest in the land affected, having regard, in particular, to the provisions of Article 1 of the First Protocol to the European Convention on Human Rights;
- that the acquiring authority has a clear idea of how it is intending to use the land it seeks to acquire, that all the land is required for the

purpose of the scheme and that the acquisition is not premature;

- that it can show that all necessary resources to carry out its plans are likely to be available within a reasonable timescale, and
- that the scheme is unlikely to be blocked by any impediment to implementation.

Legal and procedural matters

9.7 I deal first with legal and procedural matters. The gist of Mr Armstrong-Braun's submission is that I cannot legally consider the alternative routes suggested by objectors as they have not had a Strategic Environmental Assessment as required under the European Union SEA Directives nor have they been subject to any public consultation exercise [3.1]. No screening opinion has been carried out and as the routes would affect EU protected habitat/species, an Ecological Survey should be carried out by the proposers and Derogation Procedures under the EU HD Article 16 must be carried out by the Inspector.

9.8 Whether or not it is lawful or not for me to consider the alternatives in the absence of these matters is clearly a matter of law, but it seems to me that these alternatives are not being promoted by a body with a statutory function in this respect and that consideration of the alternatives is a material consideration for me to take into account in my assessment of the Orders. In addition, if I were minded to consider that the alternatives being put forward had some merit and should be investigated further, and the Minister concurred, a further process involving statutory processes, including the procedures referred to, would have to take place before any alternative could be proceeded with.

9.9 I consider therefore that it is right and proper for me to consider the alternative routes as part of my assessment of the Orders which are the subject of this inquiry and that there was no case for me adjourning or abandoning the inquiry on these grounds.

9.10 In terms of the requests for adjournments, firstly, in respect of the non-receipt of promoters' proofs, it seems to me that the promoters had taken all reasonable steps to distribute copies of these. It is unfortunate that some objectors were not in possession of proofs at the start of the inquiry, however in the light of the deferment of presentation of the evidence and programming of the inquiry to allow affected objectors adequate time to prepare their cross examination, I do not consider that any case was prejudiced by the non-delivery of proofs. This, in my view, was confirmed by the extensive and detailed cross examination which objectors made when presenting their cases.

9.11 Secondly, in respect of the request for an adjournment to consider the announcement made by the Welsh Assembly Government on the preferred route for the adjoining section of road, on the day that this was requested

the day's business was for me to have a presentation on the details of the various proposals contained in the Side Roads Order, together with details of the necessity for all of the plots contained in the CPO. The day's programme also included the hearing of the withdrawal of the objection by Flintshire County Council. I do not consider that any consideration of the announcement was relevant, nor did it justify an adjournment of the inquiry.

9.12 In respect of the representations that the announcement would prejudice the outcome of the inquiry, the fact that other improvements are being considered was not new at the time of the inquiry; reference is made in the promoters' evidence [4.6]. Moreover, any further improvements planned for the adjoining sections are at a less advanced stage than the proposals which are the subject of this report. These further improvements are not therefore certain to proceed; my consideration of the current Orders is based on the evidence I have heard and on the circumstances which appertained at the time of the inquiry. If future schemes are proposed, it seems to me that these would need to progress through statutory processes and be subject to assessment at a future date. My conclusions and recommendations do not therefore depend on any future improvement scheme planned for the A494/A55 trunk route, nor would they seem to prejudice any future decision on other schemes.

9.13 I conclude therefore that the announcement does not prejudice a decision on these Orders.

Consultation process

9.14 I deal next with objections that consultation on the scheme was inadequate. Miss Shenton, Mr Sargeant, Mr Farrow, Mr Buchanan, Mr Butler, Mr Sleeman and Mrs Butler raise concerns that proper consultation had not taken place and that a large percentage of the population were unaware of the proposals [6.254 & 6.261], or that the consultation is out of date [6.16]. Concerns are also raised that the scheme is being presented in isolation to successive, similar schemes [6.43, 6.152, 6.184 & 6.230], and that the police and the Vehicle and Operator Services Agency (VOSA) have not been consulted [6.229].

9.15 I have noted these concerns. However, the evidence is that there has been extensive consultations on the scheme; public consultation was carried out initially in 1992 [4.7], and again in 2006 [4.13]. It was as a result of comments made in response to the latter consultation that changes were made to the proposed scheme [4.13]. In addition, a Public Liaison Officer has been located at the Project Offices in Queensferry and has maintained communication with local residents [8.6]; an Orders exhibition of the proposals was held in January 2007 [4.14]. The promoters also confirmed that all statutory requirements in relation to the advertising of the scheme had been met [1.10].

9.16 Correspondence from the police and VOSA indicates that there has also been detailed consultation with both these organisations [8.217 & 8.219].

9.17 It seems to me that the consultation process has been thorough, and that there has been widespread knowledge of the proposals within the community, as evidenced by the number of respondents to the draft Order publication. I note also that, although not necessarily explicit on every document, the fact that this would form part of a series of improvements along the road corridor is acknowledged in the consultation process [8.238].

9.18 I conclude therefore that the consultation process has been properly carried out and that the likelihood of further adjoining schemes being put forward has been made clear.

Adequacy of the traffic study

9.19 A number of objectors, including Mr Sargeant, Mr Mawdsley and Mrs Butler state that the traffic data and studies are out of date [6.42, 6.148 & 6.259]; others, including Mr Sargeant, Mr Howell, Ewloe Green A55 Action Group, Mr Mawdsley and Mrs Butler, that proper account has not been taken of local developments or of likely changes in car usage as a result of initiatives aimed at reducing emissions, etc. [6.46, 6.108, 6.114, 6.148, 6.259].

9.20 The basis for these objections is largely that the traffic forecasts appear to be based on the North East Clwyd Traffic Study, carried out in 1990 [4.116] and the Queensferry Transportation Study, carried out in 1998/9 [4.9]. However, the data for this has been updated by later traffic work from the Ewloe Interchange Study Survey Report carried out in 2003 [4.117], journey time surveys carries out in 2003, and from counters and roadside surveys carried out in 2007 [4.119 to 4.123]. In addition, the modelling used for the scheme has been subject to validation which shows that the criteria for assessing the degree of fit between a model and observed traffic as set out in the Design Manual for Roads and Bridges (DMRB) are met [4.129 & 4.130].

9.21 So far as taking account of developments and introduction of initiatives is concerned, the modelling is based on forecasts in National Road Traffic Forecasts (Great Britain) 1997 and the Department for Transport's TEMPRO database 2006 [4.133 and 4.134]. The promoters confirm that growth factors used in the modelling take account of national and local economies, natural changes in demographic and economic parameters in the area and that a band of growth ranging from low growth to high growth has been assessed to take account of possible variations in the factors [4.136 to 4.138]. Nationally recognised allowances for potential developments in the vicinity of the scheme are also included [8.142].

9.22 I consider that the data used in the traffic forecasting modelling is soundly

based, and that the modelling process has been subject to proper validation and takes account of likely changes which may occur.

9.23 I conclude therefore that the traffic model properly reflects current situation and that the forecasting has been carried out satisfactorily in accordance with current requirements and practice.

Health Impact Assessment

9.24 A number of objectors raise concerns that a Health Impact Assessment has not been carried out, particularly in the light of the additional noise and air pollution that the scheme might give rise to.

9.25 I have carefully considered this matter, and whether this would assist the decision process in respect of the scheme. Objectors refer to a Royal Commission on Environment Pollution report which supports the inclusion of Health Impact Assessments within the Environmental Impact Assessment process as the best means of considering health issues in the planning process, and to the commitment that the Welsh Assembly Government has given to health impact assessments [6.237 & 6.25], as well as being published in the draft Ministerial Interim Planning Policy Statement DMIPPS 02/2006. Reference is also made to the Gauderman study which links respiratory health among children living near to major roads in America.

9.26 The promoters' case is that there is currently no statutory or procedural requirement to carry out a Health Impact Assessment for highway schemes in Wales [8.166]. Current requirements in relation to highway schemes are set out in the Highways (Assessment of Environmental Effects) Regulations 1999 and Directive 85/337/EC, as amended by Directive 97/11/EC which requires that an Environmental Impact Assessment be carried out [8.221].

9.27 Moreover, the Environmental Impact Assessment covers many factors which could have an impact on health, in a way which is structured, systematic and tested [8.221]. In addition, the factors considered to be the determinants of Health and Well-being listed in the published guidance which relate to highway schemes are assessed in the Environmental Statement; those not so covered would have minimal impact as a result of the scheme [8.223]. I am satisfied therefore with the promoters' assertion that the Environmental Impact Assessment provides adequate information on issues concerning health.

9.28 I conclude that a Health Impact Assessment is not an obligation of the current assessment requirements and that the Environmental Statement and Impact Assessment are currently the appropriate means of assessing the likely impact of the scheme.

Environmental Statement

9.29 An Environmental Impact Assessment in the form of an Environmental Statement (ES) has been carried out in accordance with the Highways (Assessment of Environmental Effects) Regulations 1999. The assessment work was preceded by a screening exercise, carried out in accordance with the Regulations and reported in the Record of Determination published in 2007 [4.186].

Air quality

9.30 Air quality has been assessed under five methodologies; localised, generalised, regional, ecosystems and construction [4.200].

9.31 The localised assessment is that there would be slightly greater concentrations at some receptors, slightly lower concentrations at some receptors, and neutral at the remainder [4.207].

9.32 The generalised assessment is that there would be a minor, beneficial impact on the exposure to air quality in the area. This would be generally due to the movement of the road alignment away from the majority of houses along the route [4.210].

9.33 In terms of the regional assessment, I note the promoters evidence that a worse case scenario is reported [8.2], and that by 2025, compared with the do minimum case, the do something case would result in a reduction in carbon monoxide of 4.5% and a reduction in total hydrocarbons (THC) of 10.7%; it would result in an increase in oxides of nitrogen (NO_x) of 17.1%, an increase in particulate matter of diameter less than 10 microns (PM_{10}) of 40.9% and an increase in carbon dioxide of 15.1% [8.216]. I note also the promoters' evidence that the predicted increase in carbon dioxide of 15.1% would equate to 0.078% of the total emissions in Flintshire [8.216]. Nevertheless the regional assessment is that the scheme would have a moderate adverse effect [4.214].

9.34 The overall impact for the Ecosystems Assessment is predicted to be of a minor adverse nature [4.219].

9.35 The construction assessment is that the impacts would be major due to the scale and duration of construction and the proximity of the receptors. A set of mitigation measures would be included for use in the Construction Environmental Management Plan which would reduce these impacts to a moderate significance [4.222].

9.36 A number of concerns are raised in connection with air quality. A proportion of these are in respect of the lack of a Health Impact Assessment, on which I have already concluded. Mr Mackie and Mr Miller contend that the assessment should be made on the basis of particle size of 2.5 microns,

rather than the 10 microns used in the ES [6.187]. Mrs Clamp makes a similar argument in relation to recent research into ultra fine particle fractions [6.224]. Mr Gray compares the likely impact to emissions from aircraft and cigarette smoking [6.119 to 6.122] and in addition, Mr Perrett contends that the reliance on new technologies is too optimistic [6.263].

9.37 I have carefully considered these. However it seems to me that the air quality assessment has been carried out in accordance with the requirements of the DMRB. None of the objectors present any evidence to suggest that this is not the case; rather they seek to suggest that the assessment should have been carried out on a basis other than as set out in DMRB. In my view this is a matter of policy, and a such not an issue for me to take into account in coming to a conclusion.

9.38 Miss Shenton states that the likely variation in forecasting accuracy renders the assessment of minor beneficial in PM_{10} and nitrogen dioxide (NO_2) to be not significant [6.10]. However I note that any possible variations would apply equally to the Do Minimum and Do Something cases [8.2], and that the changes predicted are consistent with the differences in traffic predicted for the Do Minimum and Do Something situations [8.3]. I also note that the assessment is based on a worst-case scenario and that emissions in the Do Something situations are likely to be over-estimated resulting in the assessment likely to be pessimistic [8.2]. She also contends that an increase in un-roadworthy vehicles, and Councillor Gambino that vehicles changing gear to ascend the hill, would add to the pollution [6.13 & 6.63]. I note that there are no data available on the number of vehicles which fail emission tests, and that the Welsh Assembly Government has relied on air quality modelling carried out as described in the ES [8.8]. There is no evidence to indicate that these factors would have any significant effect on the assessment of the impact that the scheme would have on air quality, and I conclude therefore that this would not be significant.

9.39 The remaining objections on the grounds of air quality relate to the likely impact that the scheme would have.

9.40 I conclude that the assessment, having been carried out in accordance with DMRB, is soundly based and gives a fair representation of impact that the scheme would likely have. I conclude therefore that, although there would be some slight increases in the local case, there would also be some decreases, and these would be slight in nature. The general case would be minor beneficial, and there would be a minor adverse impact on ecosystems. I conclude that these would not be of sufficient significance to be a factor in a decision on the scheme. However I do note that there would be a moderate adverse impact in the regional assessment, and that some of this increase would be as a result of the removal of the speed limit [4.214].

9.41 In terms of construction, there could be major impacts due to the scale and duration of construction. However I note that a set of mitigation measures would be included for use in the Construction Environmental Management Plan and these would reduce impacts to a moderate significance. I consider

that the impact would not be out of proportion to the scale of the scheme, and given the temporary nature of the impact, I conclude that this would not be of an unacceptable level.

Ecology and Nature Conservation

9.42 The scheme would cross the River Dee and Bala Lake Special Area of Conservation, and pass within 10 kilometres of two other sites designated under European legislation, namely the Dee Estuary SPA/Ramsar site/proposed SAC and the Deeside and Buckley Newt Sites and a number of SSSIs and nature reserves [4.223].

9.43 The construction of the works in the vicinity of the River Dee would be planned to minimise the potential impacts and measures have been designed that would avoid or minimise impacts on species and habitats, both during construction and during the operation of the proposed scheme [4.228 & 4.229].

9.44 The assessment of the proposed scheme incorporating these mitigation measures is that where the residual impacts would be negative the level of impact would be minor; there would be no impact on some habitats and species, and there would be moderate or major positive impacts on others [4.231].

9.45 I do however note that the Statement to Inform process is still to be completed [4.187] and that a number of statutory consents might be required for works affecting legally-protected species of wildlife, before construction could start [4.189]. I note also the concerns of the Countryside Council for Wales & the Environment Agency Wales [6.306 & 6.307]. However, it seems to me that these are points of detail, and no evidence is put forward that these procedures would not be capable of completion if the Orders were to be made.

9.46 None of this part of the assessment is challenged, and I conclude that it is soundly based. I further conclude that, with the mitigation measures proposed, the scheme would not have an unacceptable impact on ecology and nature conservation.

Landscape and Visual Impact

9.47 The assessment considers the character and quality of the landscape through which the route would pass; the extent to which the proposed road improvement would be visible within the landscape; the likely landscape effects and the potential for mitigation of the impacts as well as the likely impact on sensitive receptors and the potential for mitigation of the impacts [4.234].

9.48 The assessment takes account of the proposed mitigation measures and

concludes that the impact on landscape character in 2025 would be minor beneficial for 3 of the 25 Character Areas, neutral for 16, neutral to minor adverse for 1 and minor adverse for the remaining 5 [4.235]. It also considers that the visual impact on receptors in the Design Year would be no change or a slight change for the large majority of properties [4.236].

9.49 The assessment concludes that the overall effect on Landscape Character for the scheme area as a whole is neutral. The large majority of properties would experience no change, and the overall residual visual impact of the proposed scheme would be neutral to slightly beneficial [4.240].

9.50 Miss Shenton contends that the visual impact is very subjective in nature and that many residents feel the construction would be an inescapable eyesore [6.12]. Others refer to the scale of the proposals being too large in the context of the area. These include Mrs Mewies [6.38], Mr Sargeant [6.47 & 6.52], Mr Norris [6.129 & 6.132], Mr Davies [6.146], Mr Farrow [6.153], Mrs Hough [6.163], Mrs Clamp [6.211], Mrs Bunnell [6.245], Mrs Gilogly [6.283] and Mr & Mrs Henderson [6.294].

9.51 I have considered these. I agree with the objectors that a scheme of this scale, which would comprise 7 lanes plus 2 hard shoulders and for at least part of its length would have 2 local roads routed alongside, would have a significant impact on the principally urban/semi-rural area surrounding the road, as well as the urban conurbations of Queensferry, Pentre, Aston Mead and Aston/Higher Shotton [4.58]. Moreover it would widen the A494 corridor to between some 48.5 and 58 metres from its present width of between some 31 metres and 42 metres [4.93]. In my view this represents a significant increase.

9.52 Whilst I accept that the assessment has considered the likely impact on receptors, and concluded that no properties would experience a substantial visual impact [4.236], I do not consider that the assessment reflects the overall likely impact on the landscape of the area.

9.53 My conclusion therefore is that the scheme would have a significant impact on the landscape.

Land Use

9.54 Some 53 residential properties would be taken for the implementation of the scheme, the majority of which have already been purchased by the Welsh Assembly Government [4.242]. Some 11 hectares of land would be lost from agricultural/equestrian use. This would be either grade 2 or 3, and is assumed to be classed as ‘Best and Most Versatile’ [4.245 & 4.246]. This loss would be of moderate significance. The scheme would also affect the civic amenity site and the County Council depot at Queensferry, and most of the haulage depot, including its direct access to the trunk road [4.243].

9.55 None of the objectors challenged the land use assessment, and I conclude

that this is a fair assessment of the impact that the scheme would have and this impact needs to be balanced against the likely benefits of the scheme.

Noise and vibration

9.56 The noise and vibration assessment has been carried out in accordance with the DMRB [4.247]. The noise climate is strongly influenced by road traffic noise from the A494 and tends to be continuous throughout the daytime and night-time [4.250].

9.57 Without the scheme there would initially be a gradual road traffic noise increase due to natural growth in traffic; this would be reversed as traffic growth progressively exceeds the capacity of the existing road leading to congestion and lower vehicle speeds. There would be a sudden improvement when low-noise surfacing is installed at the time that the road is resurfaced. By 2025 the net effect of congestion and resurfacing would be an overall decrease of 102 people bothered by road traffic noise compared to the 2010 Do Minimum scenario [4.251].

9.58 The scheme would include noise barriers and a low noise road surface and the effects of these have been taken into account in the assessment [4.254 & 4.255].

9.59 With the scheme, there would be an increase of some 75 in the number of people bothered by traffic noise in 2010 [4.256]. By 2025, when reaction to the level of traffic noise would have reverted to the steady state relationship, the predicted total number of people bothered by traffic noise with the proposed scheme would be some 19 more than the low noise surface do minimum scenario; this would be some 83 fewer than with the 2010 do minimum situation which reflects current conditions [4.257].

9.60 The scheme would have a beneficial impact on noise for those residents exposed to the highest noise level band (>70 dB), with the number of residents very much or quite a lot bothered by road traffic noise predicted to decrease by some 102 in the opening year. The number of people being very much or quite a lot bothered the lower noise bands is predicted to rise, leading to an increase in the number bothered of some 175 [4.258].

9.61 There would also be an increase in noise on local roads as a result of changes in traffic patterns which would be brought on as a result of the scheme. There would be a slight increase on the B5125 east of Northop Hall to Ewloe and a substantial increase at Brookside along the B5125 [4.262].

9.62 In terms of vibration, the assessment is that there would be a decrease in the number of people bothered by traffic vibration of some 38 in the short term (2010) and around 31 in the long term [4.264].

9.63 During construction, short-term or long-term suggested noise limits at

several residential properties would be exceeded at times; this would be addressed by alternative low noise construction methods and/or reduced working hours [4.265]. Predicted levels of vibration due to construction at local residential properties would not be expected to result in cosmetic damage or to be unacceptable to local residents [4.266].

9.64 Most of the objections on the grounds of noise relate to the impact that the scheme would have rather than the assessment process, however Mr Norris contends that traffic noise is influenced by wet road surfaces and wind direction, by the gradient at Aston Hill, un-roadworthy vehicles and by convoys of vehicles during the night [6.134]. Mr Butler refers to the likelihood of additional noise from defective exhausts and running gear [6.231], and Mrs Frost and Mr & Mrs Henderson to the effect that removal of the speed limit would have on the noise climate [6.281 & 6.292].

9.65 I have noted these concerns; however I also note that the noise calculations assume neutral conditions, with no wind and no precipitation and that these conditions would increase noise levels regardless if the scheme goes ahead or not. I agree with the promoters that the appropriate assessment is to compare predicted long term average road traffic noise levels with and without the scheme [8.129]. In addition I note that the likely increase in speed is taken into account in the noise calculations [4.259].

9.66 I consider that the assessment has been soundly based and conclude that it fairly represents the likely impact of the scheme in respect of noise and vibration.

9.67 It seems to me that, taking account of the proposed mitigation measures, there would be some properties that would benefit from noise reduction and some that would have an increase. However, none of the increases or decreases would seem to be greatly significant and I conclude that, other than the substantial increase forecast along the B5125, the scheme would not give rise to an unacceptable increase in noise.

Pedestrians, cyclists and community effects

9.68 The overall assessment of the likely effect on pedestrians, cyclists and the community is moderately beneficial [4.274]. This is largely based on the fact that the scheme would maintain or replace most of the existing routes across the trunk road, together with an improved footway/cycleway connecting Queensferry to the River Dee with a new dedicated crossing of the river to Garden City and the cycleway along the River Dee [4.269 & 4.272]. In addition, the proposed Aston Distributor Road and footway would provide routes for cyclists and pedestrians currently using the footway alongside the trunk road at Aston Hill [4.270]. The Aston subway would be replaced by a footpath along the south side of the Wrexham – Bidston railway and connected to Lower Aston Hall Lane by a new footbridge and a replacement footway alongside the new carriageway [4.270]. The existing Chevrons Road footbridge would be removed and not replaced [4.271]. The

likely impact of the scheme at specific locations is assessed to range from slightly adverse to moderately beneficial [4.273].

9.69 Most of the objections in respect of this issue relate to the proposed closure of the Chevrons Road Bridge and the provision of a new subway alongside the railway to replace the existing subway at Aston. I deal with these objections in considering the Side Roads Order. However, Mr Armstrong-Braun contends that a proper users' survey has not been carried out and that the additional distance via the Queensferry interchange would be greater than suggested by the promoters, affecting the assessment [6.207].

9.70 It seems to me that adequate surveys have been carried out at various times and dates, I am satisfied that the results are representative of the use to which the existing bridge is put [8.207]. It seems to me that the choice of starting and finishing points have a bearing on the likely increase in length of journey which the scheme would cause, and whilst I understand Mr Armstrong-Braun's contention, I do not consider that this is a significant issue in respect of the merits of the proposal. However, I do share the concerns about this proposed alternative for the existing crossing. The proposed walk to the Queensferry Interchange and the proposed manner of negotiating the interchange roundabout would not, in my view, be a particularly straightforward journey, involving crossing by means of a series of bridges and at-grade crossings of some of the roads connecting to the roundabout.

9.71 I also agree with objectors that the proposed subway at Aston would not be a particularly attractive facility. Its length and proximity to the railway would in my view be a deterrent to frequent use. In particular, having witnessed a train passing beneath the existing bridge on my site inspection, it would not be a pleasant experience for those using the proposed subway at such a time, due to the noise emanating from the train.

9.72 My conclusion is that the scheme would have some significant impacts on pedestrians, cyclists and community effects and that these need to be balanced against the likely benefits of the scheme. Whilst I note that the scheme would include improved footways and cycle ways along its length, these are of a very localised nature and I further conclude that the scheme would not make a significant contribution to facilitating walking and cycling, one of the aims of the Assembly in respect of transport [4.30].

Other environmental matters

9.73 The proposed scheme would have no significant impacts on geology or soils [4.275]. The scheme would have little or no impact on the receiving watercourses [4.276]. I note the concerns of Miss Frost and Mrs Gilogly that there might be additional risk of flooding in low-lying and reclaimed areas [6.97 & 6.286]. However, I note that any new drainage system would be designed for a 1:100 year storm with 20% additional capacity to allow for the possibility of changes in rainfall arising from global warming [8.105]. I

conclude that this is an appropriate measure to incorporate to address these concerns.

9.74 Impacts on groundwater and impacts arising from contaminated land would be minimal [4.277]. The cultural heritage sites recorded within the study corridor are either distant from the proposed works or have already been removed by earlier road construction or other works. As a consequence the potential impact of the works is slight, uncertain or none [4.280].

9.75 In relation to potential impacts on vehicle travellers, the proposed scheme would have fewer junctions and less merging and weaving traffic, reducing the perceived danger on the route. Congestion would be reduced, and so the scheme would have a beneficial effect on driver stress [4.281].

9.76 No evidence is put forward to dispute these conclusions and I agree with the assessments of these matters.

9.77 I conclude that these impacts would not be of significance.

The scheme in relation to planning policies

National Policy

9.78 National Policies in relation to transport are set out in broad terms in *www.betterwales.com* which has a target of developing a better co-ordinated and sustainable transport system to support local communities and the creation of a prosperous economy [4.23] and *Making the Connections: Delivering Better Services for Wales* which focuses on improving public services, making them more responsive, efficient and accessible to people. The latter lies at the heart of the transport strategy [4.26].

9.79 More particularly, *The Transport Framework for Wales* sets out targets for a transport system that [4.28]: -

a) delivers agreed thresholds of accessibility and information for users;

b) provides strategic mobility within environmental and health benchmarks for regeneration and other economic aims;

c) changes travel patterns and transport usage and, where appropriate, reduces the need to travel by motor vehicles by integrating with land use planning;

d) is consistent with the real needs of people living in different parts of Wales and with differing abilities to afford travel;

e) charges the traveller a fair reflection of the costs of making a

journey, financial, social and environmental;

f) is adaptable to the developing needs of Wales.

9.80 The Framework identifies five challenges to the Assembly Governments's aims for transport, as follows [4.31 to 4.36]: -

- to get people to switch to public transport and other, more sustainable, forms of transport, from their cars and thus to sustain improvements to public transport infrastructure and services;
- to prioritise the development of Assembly programmes for maintaining and developing transport networks, whether it be by rail or road;
- to address freight issues in Wales. In the past, governments have tended to concentrate on attempting to transfer more freight to rail;
- to address priorities with limited resources to meet targets for improving safety; and
- to make the safety, comfort and convenience of people making journeys by walking and cycling sufficient to attract a greater number to achieve healthier lifestyles and help improve environmental conditions.

9.81 In addition, the Assembly Government states that its emphasis on improving life in communities will mean, in relation to transport, providing a safer and better environment by: -

a) listening to the needs and wishes of local communities and local groups;

b) reducing isolation and providing opportunities for rural diversification;

c) reducing speeds and setting appropriate speed limits and restricting motor vehicles access to residential streets, where appropriate;

d) contributing to well-designed and maintained environments;

e) reducing congestion;

f) facilitating walking and cycling locally by improving facilities and off-road routes;

g) reducing traffic noise;

h) improving air quality;

i) reducing accidents.

9.82 I note that a draft strategy *Wales Transport Strategy - Connecting Wales* is currently in preparation, however although this has been through public consultation, it has not been finalised or adopted as policy by the Assembly Government [4.40]. It would therefore be appropriate for me to give limited weight to this document.

9.83 Mr Isherwood and Mr Sargeant state that consideration of these Orders is premature in advance of the finalisation of this strategy [6.20 & 6.44]. However, I note that the document would not identify individual schemes, although it does support *The Wales Spatial Plan* which emphasises the need for capacity enhancements on the east-west corridor in north east Wales [8.16]. Furthermore, it seems to me that policies and strategies will always be subject to review, revision and replacement. It would therefore be unrealistic to defer consideration of individual proposals because of such a continuing process. Given this, and the fact that the emerging strategy will not identify individual schemes, I conclude that consideration of these proposals is not premature in advance of the finalisation of the draft strategy *Wales Transport Strategy - Connecting Wales*.

9.84 In terms of the targets set out in the current Transport Framework, *Transport Framework for Wales: November 2001*, I can find no evidence that the scheme would deliver agreed thresholds of accessibility and information for users, or that it would change travel patterns and transport usage or reduce the need to travel by motor vehicles by integrating with land use planning [4.28]. Indeed, in seeking to provide additional road capacity it could be said to be aimed at having the opposite effect.

9.85 Nor is there any evidence that the scheme would be consistent with the real needs of people living in different parts of Wales, with differing abilities to afford travel, that it would charge travellers a fair reflection of the costs of making a journey, financial, social and environmental, or would be adaptable to the developing needs of Wales.

9.86 I deal with the issue of regeneration and economic aims when considering the likely impact of the scheme, however I conclude that the scheme would not support the other 5 of the 6 targets set out in the *Transport Framework for Wales: November 2001.*

9.87 In terms of the five challenges to the Assembly's aims for transport, there is no evidence that the scheme would facilitate a switch to public transport or other, more sustainable, forms of transport, or to get people to switch from their cars. In terms of prioritisation, the scheme can be said to be more an outcome of this process than one of compliance or support [4.31 to 4.36].

9.88 I deal with the issue of freight when considering the likely benefits and impacts of the scheme.

9.89 The promoters state that the scheme would improve safety. However the evidence is that in the assessment period of 60 years, from 2011 to 2070, the scheme would result in a reduction of some 97 accidents out of a total of some 2,820 and some 13 and 137 serious and slight casualties respectively out of some 397 and 3,763 respectively [4.180]. The number of fatal casualties is not predicted to be reduced. I do not consider that this would be a significant contribution to an improvement in safety, or that the likely cost of the scheme in relation to the forecast safety benefits of some £3.69m [4.180] represents a priority with limited resources.

9.90 I have already concluded that the scheme would not make a significant contribution to facilitating walking and cycling and I conclude therefore that the scheme would not support 4 of the 5 challenges set by the Assembly.

9.91 Turning to the stated emphasis on improving life in communities in relation to transport [4.37], although objectors refer to a perceived lack of consultation, I have concluded that the consultation process has been properly carried out, and I also note that changes were made to the proposals as a result of consultations [4.13]. I consider that the scheme has therefore been developed within the spirit of the first initiative of listening to the needs and wishes of local communities and local groups.

9.92 No evidence is presented which claims that the scheme would reduce isolation or provide opportunities for rural diversification. Seeking to remove the 50 mph speed limit as a corollary of the scheme would seem to me to be contrary to the initiative of reducing speeds and setting appropriate speed limits.

9.93 I have already concluded that the scheme would not make a significant contribution to reducing accidents, and although I recognise that the improvements to the cycle ways and footways proposed would make some contribution to the comfort and convenience of people making journeys by walking and cycling, I consider that this would be of small significance. I therefore conclude that the scheme would not support three and would conflict with two of the initiatives on improving life in communities. I deal with other environmental matters, congestion, traffic noise, air quality when considering the likely benefits and impacts of the scheme.

9.94 I have noted the scheme specific objectives [4.43], and that the scheme would achieve these, however no evidence is presented as to how these objectives relate to policy as set out in the policy documents. It seems to me that some of these scheme objectives conflict with policy along similar lines to my findings that the scheme would conflict. I have not therefore accorded any significant weight to this.

Regional and Local Planning Policies

9.95 There is no statutory regional planning guidance [4.44]. In terms of local plans, although current plans are now out-of-date, I note that the scheme

would comply with Conservation of the Environment Policies of the *Structure Plan Second Alteration: Flintshire Edition* [4.48] and that the route of the scheme is safeguarded in the *Alyn and Deeside Local Plan* [4.49]. I note also that the scheme would be generally supportive of Transport and Communications policies in the emerging Flintshire Unitary Development Plan [4.50] and that the Scheme would be compatible with Flintshire's Transport Plans, which support improvements to strategic routes [4.54]. I note objectors concern that the road would be constructed through the middle of land designated by Flintshire County Council on their Unitary Development Plan (UDP) as Green Barrier [6.84 & 6.154]. However, I also note that in each of the locations where the proposed scheme would take land from designated Green Barriers, the land taken is immediately adjacent to the existing trunk road and this would not contribute to infilling or the coalescence of settlements, contrary to the purpose of Green Barrier Policy [8.154]. It is my view that the scheme would not unacceptably harm the open character and appearance of the Green Barrier, and would not therefore conflict with this policy. I also take account that the scheme would involve the loss of agricultural land, which would be contrary to the emerging policies in the emerging Flintshire Unitary Development Plan [4.53].

9.96 With the exception of this latter point, which needs to be balanced against the likely benefits of the scheme, I conclude that the scheme would not conflict with local plan policies or the policies contained in the emerging Flintshire Unitary Development Plan.

Traffic and Economic Analysis of the scheme

9.97 Three economic analyses have been carried out for the scheme, a TUBA (Transport User Benefit Appraisal), quantifying benefits to users in travel time and vehicle operating costs; a COBA (Cost Benefit Analysis) quantifying benefits from changes in accident numbers; and a QUADRO (Queues and Delays at Road works) assessment quantifying benefits due to time savings during routine maintenance [4.174].

9.98 Construction costs, preparation costs, supervision costs and land costs are allocated to the year in which the expenditure would occur [4.176].

9.99 Mr Howell, Mr Mawdsley and Mr Perrett challenge the cost elements of the analyses and the soundness of the cost estimate [6.105, 6.149 & 6.265]. I note these, however the evidence is that the scheme costs are based on the most recent estimate for quarter 4 of 2006 and that an optimism bias rate of 5% has been applied representing the level of likely risk of overspend on the project. This value is appropriate for a scheme at the Public Inquiry stage [4.176]. I note also that the appraisal has been carried out in accordance with the approach laid out by the Department for Transport and that allowance is made to cover Part 1 Claims [8.112]. All roads which would be affected by the scheme have been included in the COBA assessment for accidents and as a consequence any likely changes in accidents associated with changes in traffic flows have been included and

that, in line with Welsh Assembly Government guidelines, the assessment does not include any change in housing values [8.254 & 8.255].

9.100 I conclude therefore that the cost estimate and economic assessment of the scheme are soundly based and that the appropriate factors have been taken into account in the preparation of both the estimate and the economic appraisal.

9.101 The results show that the scheme would have Net Present Values (NPV) of some £41.8m and £23.3m for the central growth and low growth respectively [4.177], QUADRO benefits would amount to a NPV of some £46.5m [4.182].

9.102 The overall economic result, combining the TUBA, COBA and QUADRO assessments shows that the scheme would have a NPV of some £91.9 million with a benefit to cost ratio of 2.5 for central growth; and a NPV of £68.6 million with a BCR of 2.1 for low growth [4.183 & 4.184].

Likely Traffic Impacts of the scheme

9.103 The scheme would have an impact on local journeys and on the local road network. This is raised by some 17 of the objectors who appeared or were represented at the inquiry, including Mr Isherwood [6.27], Mr Sargeant [6.50], Cllr Ellis [6.56], Cllr Gambino [6.61], Cllr Hardcastle [6.67], Miss Frost [6.93], Mr Howell [6.107], the Ewloe Green A55 Action Group [6.113], Mr Norris [6.130], Mr Farrow [6.158], Mrs Hough [6.167], Mrs Williams [6.175], Mr Buchanan [6.183], Mr Maloney [6.201], Mrs Bunnell [6.241], Mr Frost [6.273], and Mr & Mrs Henderson [6.293]. The most significant impacts would be as follows.

9.104 Firstly, closure of the Plough Lane junction would result in traffic which currently leaves the A494 northbound carriageway at Plough Lane travelling to the Queensferry Interchange and back along Aston Road to Plough Lane [4.166]. Traffic from the Higher Shotton and Aston Mead areas that currently join the A494 northbound at Plough Lane would also need to travel along Aston Road to join the A494 at Queensferry [4.166]. Traffic travelling southbound on the A494 wishing to access Plough Lane would leave at the Queensferry Interchange to travel via the Aston Road to Plough Lane. Traffic from the Plough Lane area wishing to travel south on the A494 would either travel north to the Queensferry Interchange via Aston Lane, or use the proposed Aston Distributor Road to the St David's Interchange to join the southbound A494 [4.168].

9.105 These journeys would have the effect of adding some 30% to the traffic on Aston Road [4.166].

9.106 It seems to me that these journeys would be significantly less convenient than those currently available, involving as they would some element of retracing steps and negotiation of additional junctions. In particular, the

junction layout for accessing the Queensferry Interchange from Aston Road and vice versa is a complex arrangement and in my view a less than satisfactory means of catering for the diverted Plough Lane traffic.

9.107 Secondly, the closure of the northbound off slip-road at St David's Park would affect traffic from the A55 East, from A55 West and from A494 South West. The proposed new link road from Ewloe Interchange to Ewloe Green would carry traffic from the A55 East. Traffic from the A494 Mold Road or the A55 from Northop would have the option of either using the A494 northbound to Queensferry and then travelling round the roundabout to A494 southbound back to St David's Park, or using the local road network [4.171]. Traffic from the A55 west to the Ewloe Green and St David's Park area would have the option to leave the A55 at the Brookside junction near Northop Hall and travel along the B5125 into Ewloe [4.169 to 4.171].

9.108 This would lead to an increase of almost 50% on the B5125, or some 2,950 to 3,400 vehicles per day in 2010 and 2025 [4.172].

9.109 Traffic currently using the A494 (Mold Road) would travel to St David's Park either via Northop and the A55 or via the A549 and B5127 through Buckley to Ewloe Green. This would lead to small increases on local roads of some 300 to 400 vehicles or so per day on the A5119 through Northop and the A549 through Buckley; an increase of some 2 to 3% [4.173].

9.110 These diversions would lead to a reduction in traffic along the A494 through Alltami of some 620 to 990 vehicles per day in 2010 and 2025 respectively, about 4% of the total flow [4.173].

9.111 The increases that are likely on the B5119 and A549 are relatively small and I agree with the promoters that the environmental and traffic implications would not be significant. However, although the numbers are not great, the additional inconvenience for those making these journeys would be significant. This would be more so for those travelling to the Aston Mead area of Aston, when in addition to the journey through Northop to access the A494, there would be the additional requirement to negotiate the proposed new roundabout on the new link road from Ewloe Interchange to Ewloe Green, the St David's Interchange roundabout and the new roundabout on the proposed Aston Distributor Road.

9.112 The likely increases on the B5125 of some 50% would, in my view, be significant, and although within the calculated capacity, the route is far from ideal including, as it would, two mini-roundabouts, as well as the proposed and existing junctions at Ewloe.

9.113 A number of objectors refer to the proposed diversion of traffic having an impact on the operation of the Queensferry Interchange [6.27, 6.51, 6.69, 6.93, 6.107, 6.201, 6.241, 6.273, & 6.293]. I note that the scheme would improve the traffic flow, that congestion is currently caused by a lack of capacity on the side roads leading away from the roundabout and that

agreement with the County Council has been reached on ways to improve the B5129 route [8.30]. I also note that if the scheme were not to proceed, three of the arms of the existing roundabout would be above the ideal operational capacity in the am peak and four of the arms would be above the ideal operational capacity in the pm peak, by 2025 [8.31]. However I also note that three arms of the proposed roundabout would be above the ideal operational capacity in the pm peak period, by 2025.

9.114 My conclusion is that the proposals would have a significant impact on some local journeys which need to be balanced against the likely benefits of the scheme.

Climbing Lane

9.115 The scheme includes the provision of a climbing lane on the southbound carriageway. The case for this is that it would remove the potential restriction caused by HGVs occupying 2 lanes of the carriageway at peak times. I note that the economic case is that the cost would be justified [4.79]. However, it is acknowledged that there would be an adverse environmental impact. It would increase the amount of land required for the scheme and would bring the road closer to homes [4.81].

9.116 The scheme as proposed would have a CRF of the order of some 106,000 vehicles per day against a highest forecast demand of some 87,200 vehicles per day in 2025. Thus the traffic volume in 2025 would be about 79% of the CRF [4.165]. I note that the climbing lane is not assessed as having an impact on the CRF [4.75]. The percentage of medium and heavy goods vehicles on Aston Hill is of the order of some 8% [4.147]. National averages for this type of road are between 7% and 12% [8.144]. The quantity of HGVs likely to use this road is therefore not exceptional. I note also that the benefits would not include any safety benefits, any benefits would emanate from the ability to carry out routine maintenance without the need to close a lane [4.79].

9.117 The A494 is routed through an area which is urban or semi-urban, and the climbing lane would have a direct impact on properties close to the proposed scheme and would add to the scale of the scheme and its impact on the landscape. It seems to me that the benefits would be trivial compared to the impact that the additional width of the climbing lane would have. I conclude therefore that the climbing lane should not form part of the scheme.

Hard shoulders

9.118 Hard shoulders are proposed for the scheme. These are not normally provided on all-purpose roads and are a departure from standards, a departure which has already been granted [8.192]. The justification for their inclusion is that of safety to the travelling public and the workforce during maintenance operations [4.87]. However there is no evidence to

suggest that there is anything exceptional about this section of road which would indicate that the risk would be greater than similar standard roads, and the evidence is that there would be no savings in accidents as a result of this provision [4.90].

9.119 The promoters state that there would be minimal saving in the amount of land taken (amounting to some 1.76 metres [4.85]); however considering the lack of evidence on accident savings, it is my view that this amount of land could not be justified as being compelling in the public interest. I note the contention that the hard shoulder would have little negative impact on the environment, nevertheless I consider that the paving of the hard shoulder would add to the visual intrusion of the road corridor and I conclude that the benefits of the hard shoulders would not justify the impact that they would cause.

Overall consideration of the scheme

9.120 There is little doubt that this section of the A494 carries substantial volumes of traffic. This is generally acknowledged by most objectors, as is the need for some improvement to be carried out. There is also little doubt that the traffic is likely to grow with time [4.158]. Nor is there doubt that the scheme would address this issue. If the scheme goes ahead, the road is forecast to carry some 74,200 to 87,200 vehicles per day by 2025 [4.164] on a section of road which would have a Congestion Reference Flow of some 106,000 vehicles per day [4.165]. This is without any account being taken of the additional capacity which would be offered by the proposed climbing lane [4.75].

9.121 On the basis of this CRF, the capacity of the scheme would be some 21% more than the 2025 central growth forecast flow [4.165]. Given that the CRF represents the level at which traffic ceases to be able to travel at the speed it wishes to do [4.146], it is clear that the scheme would have a more than generous margin over the likely flows expected to occur in the foreseeable future.

9.122 To this extent the scheme would support and comply with one of the aims in the Transport Framework, i.e. to reduce congestion. In doing this it could be said to be addressing freight issues, one of the five challenges set out in the Transport Framework. It could also be said to provide strategic mobility for regeneration and other economic aims, although no substantive evidence is put forward to support this.

9.123 However, I have already concluded that the scheme would make no significant contribution to road safety, nor would it facilitate a switch to public transport. In facilitating a removal of the existing speed limit, it would conflict with the initiative of reducing speed.

9.124 In terms of the environment, I have already concluded on air quality and noise impacts and whilst I can understand the concern of most objectors in

this regard, it seems to me that the problems referred to by objectors are present now; my conclusion is that the scheme, with the mitigation measures proposed, would not have a significant impact. I also conclude that, in the absence of the impacts which I outline in paragraphs 9.126 to 9.128 below, the remaining environmental impacts, including the likely impact on agricultural land, would not be sufficiently significant for me to recommend that the Orders be not made.

9.125 However, it is my view that the scale of the scheme is too large both for the traffic issues it seeks to solve and the community through which it would pass. The area which surrounds this part of the A494 is urban or semi-rural [4.58], however this does not seem to me to be reflected in the proposed layout which I consider would have the appearance of a rural motorway located in a situation where space is not restricted.

9.126 It is my conclusion that the scheme would have a significant impact on the landscape. In addition to this, it would impact on the local community by significantly changing local journeys. I have already concluded that the alternative means of access at Ploughs Lane would be less than satisfactory, and that the proposed subway at Aston would not be a particularly attractive facility. These impacts combined would, in my view, serve to isolate that area of Aston surrounding Aston Mead from the rest of the Aston community significantly more than the existing road.

9.127 There would also be other significant disadvantages to local traffic, already referred to, emanating from the proposed alterations at the Ewloe and St David's Interchanges, particularly for those locals travelling to and from Mold and from the A55 from the west. Some of this traffic would have to negotiate the Queensferry Interchange, and whilst I have acknowledged that there would be some improvement, there would still be some shortfall in capacity in the design year as outlined in paragraph 9.113. This seems to me to be in contrast to the improvement which is proposed for the A494 as outlined in paragraph 9.121.

9.128 In my view insufficient weight is given to the impact that the scheme would have on the local community, it is also my view that all these disbenefits are not outweighed by the benefits that the scheme would provide, almost entirely in the forecast reduction in congestion.

9.129 I have noted the need for maintenance on the route, and the extensive repairs which would be needed on the various structures, and the disruption that this would be likely to cause if the scheme were not to proceed. However, I agree with Miss Shenton that a need for maintenance is not in itself a justification for the scheme proceeding in its current form [6.17].

9.130 I note the letters of support for the scheme, particularly that the North Wales Police support the proposals on the grounds of improved safety and reduced congestion, the importance of the route to the Port of Holyhead and the support for the removal of the speed limit which the scheme would

facilitate [5.3]. I also note the support of the Tourism Partnership North Wales for the improved accessibility which the scheme would bring to the region for visitors [5.4], and that of the Wrexham County Borough Council for the significant improvements on the west/east European link which the scheme would provide, together with relief to the A55 south of Chester [5.5]. I note also the support of the North Wales Economic Forum on the grounds that the scheme would benefit companies and their employees and would be essential to the future economic development of the whole of North Wales and that to abort the scheme would seriously damage the North Wales economy [5.6]. However, no evidence is put forward which identifies the scale of benefit which the scheme would be likely to produce. Moreover I do not consider that these advantages persuade me sufficiently to recommend that the Orders should be made in their drafted form.

9.131 I recognise, however, that the Minister may wish to take a different view on the benefits and impact that the scheme would have, I therefore consider the Orders in terms of the tests set out at the start of my conclusions.

Side Roads Order

9.132 In addition to the points considered above, the following objections are made in respect of the Side Roads Order.

9.133 Mr Sargeant, Councillor Warburton, Councillor Jones and Mr Armstrong-Braun all object to the proposed removal of the bridge crossing the A494 at Chevrons Road [6.48, 6.79, 6.84 & 6.206].

9.134 I have already come to the opinion that the proposed alternative would not be a particularly straightforward journey. However, I accept the promoters' evidence that a replacement bridge would cost in the order of £800,000 [8.206]. This has to be balanced against the additional inconvenience and the number of pedestrians likely to make this manoeuvre. Even on the basis of Mr Armstrong-Braun's survey figures, the bridge is not heavily used [6.207]; taking this into account together with the additional inconvenience which would be caused, I have formed the opinion that this inconvenience for a relatively few users would not justify this cost.

9.135 I conclude therefore that, in the circumstances of the published proposals, the alternative for the proposed closure of the Chevrons Road Bridge would be reasonably convenient.

9.136 Councillor Warburton, Mrs Hough, Mr Maloney and Mrs Bunnell all object to the proposals for the Aston subway [6.80, 6.169, 6.202 & 6.244]. I have already formed the opinion that the proposal would not be a particularly attractive facility, and that this, combined with the other effects of the scheme would lead to an increasing isolation of that part of Aston village surrounding Aston Mead. I accept therefore that this link is an essential link in the local footpath network, and that the alternative route via the Plough Lane Bridge, which would add over 1 kilometre to a single journey, would

not provide a suitable link [8.172]. I note that the replacement would be wider and deeper than the subway it would replace, and that there would be a reduced sense of enclosure [8.196], however I do not consider that these factors would outweigh the additional length and the effect of the proximity of the railway line.

9.137 I conclude therefore that the proposed replacement for the existing subway would not be reasonably convenient, and that an alternative more convenient solution should be investigated.

9.138 Mr Martin objects to the proposal to turn Clay Hill Lane into a cul-de-sac on the grounds that it would bring with it problems of fly tipping and overnight parking [6.127]. I can understand Mr Martin's concerns, however the provision of a gate would conflict with its status as a highway, and unless this status is retained, the subsequent maintenance of this length of road would give rise to difficulties in the future [8.124]. I note also that this would not be favoured by the local highway authority [8.124]. It seems to me that these difficulties would outweigh any benefits that gating the road might bring. Neither Mr Martin nor any other objector suggests that Clay Hill Lane should not be closed at its junction with the A494. I consider that this would not be appropriate and conclude that the alternative arrangement whereby Clay Hill Lane becomes a cul-de-sac would be reasonably convenient.

9.139 Mr Martin also objects to the proposed footpath along the southern perimeter of the proposed road (new highway 5/A on Site Plan 5 of the draft Side Roads Order - document DD03) on the grounds of the problems that this would create [6.125]. The path is proposed mainly as a recreational route, and would also be a replacement for the proposed closure of Clay Hill Lane, the Chevrons Road footbridge and an unnumbered footpath leading from Clay Hill Lane to Daisy Bank Farm [8.122].

9.140 It seems to me that this proposed new footpath would be a necessary replacement for these closures in order to provide a reasonably convenient alternative route. I also note that the promoters would be fenced to prevent accidental straying [8.122]. I conclude therefore that the omission of this new highway from the Order would fail the relevant test and that the possible problems outlined by Mr Martin would not justify the omission.

9.141 I have noted Councillor Jones' objection to the proposed closure of footpath 122, however I also note that part of the footpath would be within the land required for the proposed balancing pond and that this part of the footpath forms a short loop which starts and terminates on the local highway network. It seems to me that this footpath is currently redundant, alternatives already being available and although there might be some slight recreational value in its retention, there is little evidence of its use. The scheme would not significantly change this and I therefore conclude that a reasonably convenient route would be available for this proposed closure.

9.142 I have additionally considered the remaining proposals contained in the draft Side Roads Order and in respect of these I conclude that alternative routes to highways proposed to be stopped up are reasonably convenient, and, where private means of access are to be stopped up, that another reasonably convenient access is available or, if required, would be provided. However, for the reasons given above in respect of the impact that the scheme would have, I am unable to recommend that the draft Side Roads Order be made.

The Compulsory Purchase Order

9.143 In terms of the Compulsory Purchase Order, the detailed work contained in the evidence shows that, in my view, the promoters have a clear idea of how it would use the land it seeks to acquire, and I am satisfied that, with the incorporation of the modifications proposed by the promoters, all the land would be required for the scheme as provided for in the draft Orders, and that the programme demonstrates that the acquisition would not be premature. The scheme is included in the agreed budget of the Welsh Assembly for the years 2007/08, 2008/09 and 2009/10 [4.12]. I note that a number of licences or consents may remain to be obtained for the scheme [4.189], and that the process to consider the Statement to Inform an Appropriate Assessment is still to be complete. This would need to precede a decision on the Orders [4.188].

9.144 I note that applications have been discussed with CCW and have already been drafted. It seems to me that these would not be an impediment to implementation of the Orders, if made.

9.145 I conclude therefore that the acquiring authority has a clear idea of how it is intending to use the land it seeks to acquire, that all the land is required for the purpose of the scheme and that the acquisition is not premature; that it can show that all necessary resources to carry out its plans are likely to be available within a reasonable timescale, and that the scheme is unlikely to be blocked by any impediment to implementation. However for the reasons already given, I conclude that, in respect of the scheme as published, there is not a compelling case for acquisition in the public interest which would justify interfering with the human rights of those with an interest in the land affected, having regard, in particular, to the provisions of Article 1 of the First Protocol to the European Convention on Human Rights. I am therefore unable to recommend that the Compulsory Purchase Order is made.

Modifications to the CPO

9.146 Three modifications are proposed to the draft CPO Order. Two are in respect of drafting inaccuracies, and one in respect of a change to the amount of land required from one statutory objector. The agreement of all the relevant parties has been secured, and in the case of the third modification, the withdrawal of the statutory objection [4.294 to 4.297]. I

confirm that I am satisfied that the modifications are appropriate and should be incorporated into the Orders if the Minister were minded to make the Orders as drafted.

Connecting Road and Slip Road Order

9.147 In terms of the Connecting Road and Slip Road Order, for the reasons I have already given, I consider that the impacts that the scheme would have would not be outweighed by the likely benefits and would not therefore be in the public interest. For this reason I am unable to recommend that this Order is made.

Alternative Routes

9.148 A number of alternative routes are suggested as well as the alternative use of the M53/A55 route around Chester ("the Chester Southern Bypass") by traffic which currently uses the A494 route.

9.149 I have considered these carefully, I can understand the objectors' case that a diversion of some 20 to 30% or so of traffic would enable the level of remaining traffic to be within the CRF of the existing road (some 71,000 vehicles per day) [4.160].

9.150 I deal first with the suggestion that the M53/A55 route around Chester should be encouraged. It seems to me that, given the additional journey length of some 8.5 kilometres and the additional time taken of between 3 and 5 minutes, there would be a disincentive for drivers to use this route in any significant numbers [8.97]. This is borne out by the fact that only some 5% of the traffic between the M56 and Northop uses this route [8.97]. It seems unlikely therefore that there could be a transfer of the required number of vehicles to reduce the forecast level of traffic to within the CRF of the existing road.

9.151 In terms of a route which would utilise the Flintshire Bridge, it seems to me that it might be that sufficient traffic could be made to transfer to this route to bring the residual flow of traffic, if not within the CRF of the existing road, at least sufficiently close for any resulting congestion to be acceptable. Some form of reduction in level of service on this corridor might be acceptable given the urban/semi-urban nature of the road, and taking account of the local nature of the traffic which would remain on the A494. However I also recognise that this would require the development of a new route between the A548 and the A55 between Kesterton and Northop, and that this would give rise to additional environmental impacts as outlined by Connah's Quay Town Council and Mr Armstrong-Braun [7.2, 7.4, 7.5, 7.8 & 8.35].

9.152 It seems to me that this is a matter of fine balance, and given the level of detail in the evidence on these routes, I am unable to recommend that these should be investigated further or that they should be ruled out of any

further investigation. I therefore make no recommendation in respect of the alternatives which would use the Flintshire Bridge.

9.153 I have considered whether the alternative route E involving an improvement of the river crossing at Saltney would remove the need for an improvement of the A494 [6.242]. However, the route is remote from the scheme, no evidence is submitted on how this might attract traffic away from the A494, and I agree with the promoters that there would be no benefit to the A494 corridor from this proposal [8.228] and I conclude that this should not be pursued by the Welsh Assembly Government as an alternative to the proposed scheme.

Other matters

9.154 With respect to Mr Farrow's objection to the proposed two-way access to Old Aston Hill [6.159], it seems to me that there would be little incentive for traffic to use Old Aston Hill in preference to the proposed distributor road and, given the difficulties for emergency and delivery vehicles [8.160], I conclude that, if the Orders were to be made, the proposed access arrangements for Old Aston Hill should remain as proposed.

9.155 In respect of Mr Farrow's suggestion that an acoustic fence be provided on top of the proposed earth banking alongside the Aston Road to St David's Park Interchange Collector-Distributor Road for its entire length, and that planting should incorporate deciduous and evergreen trees and shrubs [6.160 & 6.161], I note the response of the promoters [8.163 & 8.164]. It seems to me that as the noise mitigation measures would result in a reduction in noise if the scheme were constructed, further measures would not be necessary, and that landscaping details would give major consideration to screening in the design. I consider that, if the Orders were to be made, adequate provision would be made to address the concerns raised by Mr Farrow.

9.156 I note the concern about the proposed layout of the roundabout at the St David's Interchange [6.158]. However I also note that the layout has been designed to current standards and for forecast traffic volumes and that there would be an improvement over the existing situation in respect of improved sight lines and improvements to the approach roads [8.158]. I note also that the proposed layout has been the subject of a Safety Audit. I conclude therefore that the layout should remain as proposed if the Orders were to be made.

9.157 I note Mr Martin's request for an additional length of noise fencing at his property, however I note also the limited impact of a maximum increase of 1db(A) that the scheme would be likely to have at the property [6.126 & 8.123]. I agree with the promoters that the visual intrusion which would be caused by a more extensive fence than proposed would not justify any benefit at the property [8.123].

Summary

9.158 It is clear to me that this section of the A494 will need some form of improvement in the foreseeable future. However, I have formed the opinion that the scale of the proposals contained in the draft Orders is greater than would be required to accommodate the forecast traffic in the design year. In particular I do not consider that the scheme requires a climbing lane or hard shoulders. There is no substantial case on either safety or capacity grounds for their inclusion. The resulting scheme would be inappropriate in the landscape and would have a significant impact on the community through which the road passes, given the likely effect on local vehicular and pedestrian movements. It would produce little or no safety benefits and I do not consider that the impact would be justified by the reduction in congestion which the scheme would be likely to produce.

10 RECOMMENDATIONS

10.1 In the light of my conclusions above, I recommend that

i) The Dolgellau to South of Birkenhead Trunk Road (A494) (Drome Corner to Ewloe Improvement) Connecting Road and Slip Road Order 200_;

ii) The Dolgellau to South of Birkenhead Trunk Road (A494) (Drome Corner to Ewloe Improvement Side Roads) Order 200_; and

iii) The National Assembly For Wales (The Dolgellau to South of Birkenhead Trunk Road (A494) Drome Corner To Ewloe Improvement) Compulsory Purchase Order 200_

be not made.

N R Taylor

N R Taylor

INSPECTOR

APPENDICES

APPENDIX A

APPEARANCES

For the Welsh Assembly Government

Mr M Jarman QC	instructed by the Welsh Assembly Government, Department of Legal Services, Cathays Park, Cardiff, CF10 3NQ

He called:

Mr C Tollitt, BEng., CEng., MICE, MIHT	Project Director, Major Projects Division, Welsh Assembly Government
Mr S Jones, BEng. (Hons), CEng., MICE	Regional Director, Faber Maunsell
Mr I Taylor, BSc.	Principal Consultant, Faber Maunsell
Mr S Blunt, BSc., MSc., MLI	Principal Landscape Manager, Richards, Moorehead & Laing Ltd.
Dr G Collins, BSc., MSc., PhD.	Technical Director, Faber Maunsell
Mr N Triner, BSc., MSc., MIOA	Associate Director, Faber Maunsell
Mr P Taylor HND Civ Eng	Project Director, Alfred McAlpine Capital Projects

Objectors

For Flintshire County Council (objection No. 194)

Mr E Owen	of Counsel, instructed by B Davies, County Legal and Democratic Services Officer, Flintshire County Council, County Hall, Mold, Flintshire, CH7 6NF

He called:

Mr C Hughes, BSc., CEng, MICE	Head of Engineering Services, Flintshire County Council

Individual Objectors

Miss S Shenton (objection No. 108)	14 Mountfield Road, Aston, Hawarden, Flintshire, CH5 3AA
Mr M Isherwood AM (objection No. 279)	National Assembly for Wales, Cardiff Bay, Cardiff, CF99 1NA
Mrs S Mewies AM (objection No. 193)	64 Chester Street, Flint, Flintshire, CH6 5OH
Mr C Sargeant AM (objection No. 192)	Constituency Office, Deeside Enterprise Centre, Rowleys Drive, Shotton, CH5 1PP
Cllr C Ellis (objection No. 146)	96 Liverpool Road, Buckley, Flintshire, CH7 3LJ
Cllr H Gambino (objection No. 310)	15 Wirral View, Hawarden, Flintshire, CH5 3ET
Cllr G Hardcastle (objection No. 634)	16 Rowan Road, Aston Park, Queensferry, Flintshire, CH5 1XR
Cllr P Heesom (objection No. 312)	Pentre Ucha Farm, Gwespyr, Flintshire, CH8 9LW
Cllr M Warburton (objection No. 1883)	40 Riverside Park, Garden City, CH5 2JT
Cllr E Jones (objection No. 601)	Brynteg, 1 Beaconsfield Road, Shotton, Deeside, CH5 1EZ
Miss N Frost (objection No. 640)	54 Glynne Street, Queensferry, Deeside, Flintshire, CH5 1TA
Mr N Howell (objection No. 43)	16 Carlines Avenue, Ewloe, Flintshire, CH5 3RD
Mr J Gray (objection No. 313)	15 Greenville Avenue, Ewloe Green, Flintshire, CH5 3BJ
Mr C Martin (objection No. 46)	Clay Hill House, Clay Hill Lane, Queensferry, Flintshire, CH5 2AQ
Mr D Norris (objection No. 326)	‘Thorstone’, Old Aston Hill, Hawarden, CH5 3AH
Mr P Davies (objection No. 309)	2 Orchard Lea, Mold Road, Ewloe Green, Deeside, CH5 3GU
Mr D Mawdsley (objection No. 590)	11 Banc Y Chwarel, Bodfari, Dinbych, LL16 4DJ

Mr M Farrow (objection No. 465)	Ty Coch, Old Aston Hill, Ewloe, Flintshire, CH5 3AL
Mrs J Hough (objection No. 1613)	Y Bwthyn, 2 Moorfield Road, Aston Hall, Lane, Hawarden, CH5 3EZ
Mrs J Williams (objection No. 1122)	38 Carlines Avenue, Ewloe, Flintshire, CH5 3RQ
Mr P Buchanan (objection No. 570)	Lease Direct Finance, Dee House, St David's Business Park, Ewloe, Flintshire, CH5 2XF
Mr D Mackie[4] (objection No. 1881) &	Parmelea, Old Aston Hill, Ewloe, Deeside, CH5 3AH
Mr B Miller (objection No. 614)	Melbourne, Old Aston Hill, Ewloe, Flintshire, CH5 3AH
Mr J Maloney (objection No. 1879)	20 Moorfield Road, Aston Hill, Hawarden, Flintshire, CH5 3EZ
Mr E Armstrong-Braun (objection No. 1885)	Amazonia, 8 Eaton Close, Broughton, Chester, CH4 0R
Mrs S Clamp (objection No. 325), who gave evidence and called:	"Thorstone", Old Aston Hill, Hawarden, CH5 3AH
Professor C Howard	University of Ulster
Mr J Butler	'Sandown', Old Aston Hill, Hawarden, Flintshire, CH5 3AH

For Mrs S Bunnell, Sunnymead, Old Aston Hill, Ewloe, Deeside, CH5 3AH (objection No. 775); Mr & Mrs A Ellis, 15 Riverside Park, Sealand, Deeside, Flintshire, CH5 2JR (objection No. 968); Mr T Sleeman 62 Carlines Avenue, Ewloe, Deeside, Flintshire, CH5 3RH (objection No. 1878); Mrs D Butler, 'Sandown' Old Aston Hill, Hawarden, Flintshire, CH5 3AH (objection No. 1882)

Mr J Butler	'Sandown', Old Aston Hill, Hawarden, Flintshire, CH5 3AH

[4] Joint statement read by Mr Mackie who was cross–examined on the statement

For Mr B Perrett, 14 Moorfield Road, Hawarden, Deeside, Flintshire, CH5 3EZ (objection No. 1884)

Miss S Shenton	14 Mountfield Road, Aston, Hawarden, Flintshire, CH5 3AA

For Mr I Frost, 83 Courtland Drive, Aston Park, Deeside, Flintshire, CH5 1UJ (objection No. 560); Mrs M Frost, 83 Courtland Drive, Aston Park, Deeside, Flintshire, CH5 1UJ (objection No. 584); Mrs C Gilogly, 44 Glynne Street, Queensferry, Deeside, CH5 1TA (objection No. 40); Mr & Mrs J Henderson, 25 Carlines Avenue, Ewloe, Deeside, Flintshire, CH5 3RF (objection No. 595);

Miss N Frost	54 Glynne Street, Queensferry, Deeside, Flintshire, CH5 1TA

For The Ewloe Green A55 Action Group (objection No. 7)

Mr J Iball	Fourwinds, Liverpool Road, Buckley, Flintshire, CH7 3LN

Counter Objectors

For Connah's Quay Town Council, 14 Greenacres, Wepre Drive, Connah's Quay, CH5 4HB

Cllr I Dunbar (counter objection No. 136)	Chair of Planning
Mr E Armstrong-Braun (counter objection No. 14)	Amazonia, 8 Eaton Close, Broughton, Chester, CH4 0R

APPENDIX B

DOCUMENTS

Inquiry and Pre-inquiry documents

Documents produced at the Inquiry

INQ/1	Notes of Pre – Inquiry Meeting
INQ/2	Statutory Procedures Folder
INQ/3	Inspector's requests for Information
INQ/4	Plan showing alternative routes A1, A2, B & C
INQ/5	Plan showing alternative route E
INQ/6	Folder of correspondence in respect of alternative route A1
INQ/7	Folder of correspondence in respect of alternative route A2
INQ/8	Folder of correspondence in respect of alternative route B
INQ/9	Folder of correspondence in respect of alternative route C
INQ/10	Two letters dated 10 September 2007 and one dated 7 September 2007 from P Wilson & Company withdrawing the objection on behalf of Redrow Homes Ltd.
INQ/11	Letter dated 13 September 2007 from Flintshire County Council withdrawing its objection to the scheme
INQ/12	Additional letter of objection received after the inquiry opened dated 13 September 2007
INQ/13	Folders of pre-inquiry correspondence with objectors
INQ/14	Folders of pre-inquiry correspondence with supporters
INQ/15	Folders of pre-inquiry correspondence with those making representations
INQ/16	Folder of correspondence in respect of alternative route E

Other documents submitted by the promoter

WAG/1	Opening Statement
WAG/2	Illustrative plan near ASDA store, Queensferry
WAG/3	Draft order modifications
WAG/4-11	Response from Promoters to Inspector's Questions
WAG/12	Statement to inform an Appropriate Assessment and Consultation Papers
WAG/13	Review of the Health (Inequality) Impact Assessment of the St Mellons Link Road Development 2002
WAG/14	Basic Screening Record Sheet – A494 September 2007
WAG/15	Reporting of Noise Effects of the Scheme - Response
WAG/16	Summary Provision of Hard shoulders/Climbing Lane
WAG/17	Average Daily Flow by Week - Chart
WAG/18	Confirmation of Arcady Results/Roundabouts & Interchanges
WAG/19	Width of Mainline Land Take/Existing & Proposed

WAG/20	Map-Carline Avenue to Penarlag Primary
WAG/21	Explanation of Roundabout Flow Capacity (RFC)
WAG/22	Fencing between the Wrexham Bidston Railway line and the proposed footpath
WAG/23	Assembly Government responses to objections to the A494 proposals
WAG/24	Closing submission of the Promoters of the scheme, the Welsh Assembly Government

Proofs of Evidence

NB. The proofs of evidence are as submitted. The statements and opinions they contain may have been amended or withdrawn during the course of examination during the inquiry

By Promoting Authority

{These documents are in the deposit documents at the following references: -}

DD34	Proof of Evidence of Mr C Tollitt, Part A
DD 34A	Proof of Evidence of Mr C Tollitt, Part B
DD34B	Summary Proof of Evidence of Mr C Tollitt
DD35	Proof of Evidence of Mr S Jones
DD35A	Summary Proof of Evidence of Mr S Jones
DD36	Proof of Evidence of Mr I Taylor
DD36A	Summary Proof of Evidence of Mr I Taylor
DD37	Proof of Evidence of Mr S Blunt
DD37A	Summary Proof of Evidence of Mr S Blunt
DD38	Proof of Evidence of Dr G Collins
DD38A	Summary Proof of Evidence of Dr G Collins
DD39	Proof of Evidence of Mr N Triner
DD39A	Summary Proof of Evidence of Mr N Triner
DD40	Proof of Evidence of Mr P Taylor
DD40A	Summary Proof of Evidence of Mr P Taylor

Rebuttal Evidence

WAG/REB/7/1	Rebuttal – Mr J Iball
WAG/REB/7/2	Rebuttal – Mr J Iball – Additional objection
WAG/REB/40/1	Rebuttal – Mrs C Gilogly
WAG/REB/43/1	Rebuttal – Mr N Howell
WAG/REB/43/2	Rebuttal – Mr N Howell Additional Objection
WAG/REB/46/1	Rebuttal – Mr C Martin
WAG/REB/108/1	Rebuttal – Miss S Shenton
WAG/REB/146/1	Rebuttal – Cllr C Ellis
WAG/REB/192/1	Rebuttal – Mr C Sargeant AM

WAG/REB/193/1	Rebuttal – Mrs S Mewies AM
WAG/REB/279/1	Rebuttal - Mr M Isherwood AM
WAG/REB/309/1	Rebuttal – Mr P Davies
WAG/REB/309/2	Rebuttal – Additional Objection Mr P Davies
WAG/REB/310/1	Rebuttal - Mr J Butler
WAG/REB/311/1	Rebuttal – Cllr H Gambino
WAG/REB/312/1	Rebuttal - Cllr P Heesom
WAG/REB/313/1	Rebuttal – Mr J Gray
WAG/REB/325/1	Rebuttal – Mrs S Clamp
WAG/REB/325/2	Rebuttal – Additional Evidence from Mrs S Clamp
WAG/REB/326/1	Rebuttal – Mr D Norris
WAG/REB/465/1	Rebuttal – Mr M Farrow
WAG/REB/560/1	Rebuttal – Mr I Frost
WAG/REB/560/2	Rebuttal – Addendum: Mr I Frost
WAG/REB/570/1	Rebuttal – Mr P Buchanan
WAG/REB/584/1	Rebuttal – Mrs M Frost
WAG/REB/590/1	Rebuttal – MR D Mawdsley
WAG/REB/595/1	Rebuttal – Mr & Mrs Henderson
WAG/REB/595/2	Rebuttal – Mr & Mrs J Henderson Additional evidence
WAG/REB/601/1	Rebuttal – Cllr E Jones
WAG/REB/614/1	Rebuttal - Mr B Miller and Mr D Mackie
WAG/REB/634/1	Rebuttal – Cllr G Hardcastle
WAG/REB/640/1	Rebuttal – Miss N Frost
WAG/REB/775/1	Rebuttal - Mrs S Bunnell
WAG/REB/775/2	Rebuttal - Addendum: Mrs S Bunnell
WAG/REB/968/1	Rebuttal – Mr A & Mrs C Ellis
WAG/REB/1122/1	Rebuttal – Mrs J Williams
WAG/REB/1613/1	Rebuttal – Mrs J Hough
WAG/REB/1613/2	Rebuttal – Additional Objection Mrs J Hough
WAG/REB/1878/1	Rebuttal – Mr T Sleeman
WAG/REB/1879/1	Rebuttal – Mr J Maloney
WAG/REB/1881/1	Rebuttal - Mr B Miller and Mr D Mackie
WAG/REB/1881/2	Rebuttal - Mr B Miller and Mr D Mackie, Addendum
WAG/REB/1882/1	Rebuttal – Mrs D Butler
WAG/REB/1882/2	Rebuttal – Mrs D Butler, Addendum
WAG/REB/1883/1	Rebuttal – Mr M Warburton
WAG/REB/1883/2	Rebuttal – Mr M Warburton – Additional Objections
WAG/REB/1884/1	Rebuttal – Mr B Perrett
WAG/REB/1885/1	Rebuttal - Mr E Armstrong-Braun
WAG/REB/1885/2	Rebuttal Addendum - Mr E Armstrong-Braun

Rebuttal Evidence to written statements

WAG/REB/4/1	Rebuttal – Mr D & Mrs S Binns

WAG/REB/18/1	Rebuttal – Mr G Sharp
WAG/REB/32/1	Rebuttal – Mr E Ratcliffe
WAG/REB/41/1	Rebuttal – Mr R Lloyd
WAG/REB/42/1	Rebuttal – Mrs M Lloyd
WAG/REB/45/1	Rebuttal – Mr & Mrs J Hill
WAG/REB/53/1	Rebuttal – Mrs J France
WAG/REB/58/1	Rebuttal – Mrs L Perrett
WAG/REB 69/1	Rebuttal – Mrs V Blears
WAG/REB 74/1	Rebuttal – Mr U Dominguez & Mrs A Dominguez (objection 115)
WAG/REB/119/1	Rebuttal – Mrs T Wright
WAG/REB/147/1	Rebuttal – Mrs M Tait
WAG/REB/161/1	Rebuttal – Ms S Pleavin
WAG/REB/166/1	Rebuttal – Mr T & Miss G Bentley
WAG/REB/316/1	Rebuttal – Mr R Bowden
WAG/REB/317/1	Rebuttal – Mrs J Dingle & Mr G Dingle (objection 318)
WAG/REB/567/1	Rebuttal – Mr D Evans
WAG/REB/574/1	Rebuttal – Mr R Waters
WAG/REB/582/1	Rebuttal – Mr E Francis
WAG/REB/591/1	Rebuttal – Mr J Griffiths
WAG/REB/591/2	Rebuttal – Mr J Griffiths - Additional evidence
WAG/REB/592/1	Rebuttal – Mrs S Griffiths
WAG/REB/606/1	Rebuttal – Mr H Jones
WAG/REB /612/1	Rebuttal – Mrs C Bithell
WAG/REB/626/1	Rebuttal – Mrs C Speed
WAG/REB/627/1	Rebuttal – Mr R Speed
WAG/REB/632/1	Rebuttal – Ms E Burnham AM
WAG/REB/1221/1	Rebuttal – Ms C White
WAG/REB/1541/1	Rebuttal – Mr G Bithell
WAG/REB/1541/2	Rebuttal – Mr G Bithell – Additional evidence
WAG/REB/1722/1	Rebuttal – Mr D Hough
WAG/REB/1877/1	Rebuttal – Mr J Lever
WAG/REB/1880/1	Rebuttal – Mr R Eaton

By Objectors

OBJ/7/1	Proof of Evidence of Mr J Iball
OBJ/40/1	Proof of Evidence of Mrs C Gilogly
OBJ/43/1	Proof of Evidence of Mr N Howell
OBJ/43/2	Mr N Howell – Summing up
OBJ/43/3	Mr N Howell - Closing statement
OBJ/46/1	Proof of Evidence of Mr C Martin
OBJ/108/1	Proof of Evidence of Miss S Shenton
OBJ/108/2	Miss S Shenton – Appendices 1 to 4

OBJ/146/1	Proof of Evidence of Cllr C Ellis
OBJ/192/1	Proof of Evidence of Mr C Sargeant
OBJ/192/2	Letter from Mr Sargeant dated 25 September 2007
OBJ/193/1	Proof of Evidence of Mrs S Mewies
OBJ/194/1	Flintshire County Council Summary Proof*
OBJ/194/2	Flintshire County Council Proof (1 of 2)*
OBJ/194/3	Flintshire County Council Proof (2 of 2)*
OBJ/194/4	Flintshire County Council Opening Statement and Chronology of Events
OBJ/279/1	Proof of Evidence of Mr M Isherwood AM
OBJ/279/2	Additional proof of evidence
OBJ/309/1	Proof of Evidence of Mr P Davies
OBJ/309/2	Mr P Davies – Census Information
OBJ/309/3	Mr P Davies – Opening of Queensferry Bypass brochure
OBJ/309/4	Mr P Davies – Closing Statement
OBJ/310/1	Summary Proof of Evidence of Mr J Butler: VOSA summary
OBJ/310/2	Proof of Evidence of Mr J Butler - VOSA main evidence
OBJ/310/3	Mr J Butler: Appendix – comment on Alternative Assessment
OBJ/310/4	Mr J Butler: Appendix – objection to alternative route proposal plan
OBJ/310/5	Mr J Butler: Appendix – objection to updated drawings
OBJ/310/6	Mr J Butler: Appendix – VOSA statistics
OBJ/310/7	Mr J Butler: Appendix – Queensferry traffic congestion
OBJ/310/8	Mr J Butler: Appendix – further VOSA statistics
OBJ/310/9	Summary Proof of Evidence of Mr J Butler - HIA
OBJ/310/10	Proof of Evidence of Mr J Butler - HIA
OBJ/310/11	Mr J Butler - Appendix of correspondence with WHIASU
OBJ/310/12	Mr J Butler - Appendix – Ministerial Interim Planning Policy Statement
OBJ/310/13	Mr J Butler - Appendix recent UK Government source items
OBJ/310/14	Mr J Butler - Appendix – email correspondence about signage
OBJ/310/15	Mr J Butler - Police/VOSA Closing summary
OBJ/310/16	Mr J Butler - HIA Closing summary
OBJ/311/1	Proof of Evidence of Cllr H Gambino
OBJ/312/1	Proof of Evidence of Cllr P Heesom
OBJ/312/2	Cllr P Heesom - Appendix – closing summary
OBJ/313/1	Proof of Evidence of Mr J Gray
OBJ/313/2	Mr J Gray - Addition to Objection
OBJ/313/3	E-mail dated 18 August from Mr Gray to the Welsh Assembly Government
OBJ/325/1	Summary Proof of Evidence of Mrs S Clamp
OBJ/325/2	Mrs S Clamp – Appendices for Summary
OBJ/325/3	Proof of Evidence of Mrs S Clamp
OBJ/325/4	Mrs S Clamp – Appendix documents 1 to 11
OBJ/325/5	Mrs S Clamp – Appendix Addendum documents 12 to 15

OBJ/325/6 Mrs S Clamp – Appendix Non-tech summary Prof Howard evidence
OBJ/325/7 Mrs S Clamp – Appendix Presentation by Prof Howard
OBJ/325/8 Mrs S Clamp – Appendix Microgeneration Action Plan
OBJ/325/9 Mrs S Clamp – Closing Statement
OBJ/326/1 Summary Proof of Evidence of Mr D Norris
OBJ/326/2 Proof of Evidence of Mr D Norris
OBJ/326/3 Mr D Norris – Appendix – My Noise Study
OBJ/326/4 Mr D Norris – Addendum
OBJ/326/5 Mr D Norris – Additional Reference Documents
OBJ/326/6 Mr D Norris – Closing Statement
OBJ/465/1 Proof of Evidence of Mr M Farrow
OBJ/465/2 Summary Proof of Evidence of Mr M Farrow
OBJ/560/1 Proof of Evidence of Mr I Frost
OBJ/560/2 Mr I Frost - Additional letter
OBJ/560/3 Mr I Frost - 2nd Additional letter
OBJ/568/1 Proof of evidence of Mr Mair, P Wilson & Company representing Redrow Homes (North West) Ltd.*
OBJ/570/1 Proof of Evidence of Mr P Buchanan
OBJ/570/2 Mr P Buchanan – Additional Information re Video
OBJ/584/1 Proof of Evidence of Mrs M Frost
OBJ/584/2 Mrs M Frost - Addendum
OBJ/590/1 Proof of Evidence of Mr D Mawdsley
OBJ/590/2 Mr D Mawdsley – Borderlands Rail Study
OBJ/590/3 Mr D Mawdsley – Rail Strategy
OBJ/590/4 Mr D Mawdsley – Merseyside Rail Strategy
OBJ/590/5 Mr D Mawdsley – Rail Infrastructure Final Report
OBJ/590/6 Mr D Mawdsley – Welsh Assembly Goverment Response to Rail Infrastructure Report
OBJ/590/7 Mr D Mawdsley – Closing Statement
OBJ/595/1 Proof of Evidence of Mr & Mrs J Henderson
OBJ/601/1 Proof of Evidence of Cllr E Jones plus Appendices A, B, C & D
OBJ/601/2 Cllr E R Jones - Addendum to statement dated 17 August 2007
OBJ/601/3 Cllr E R Jones - Appendix – supplementary objection
OBJ/601/4 Letter dated 5 September from Cllr Jones
OBJ/601/5 Letter dated 22 July from Cllr Jones requesting site inspections
OBJ/634/1 Proof of Evidence of Cllr G Hardcastle
OBJ/634/2 Cllr G Hardcastle Closing Statement
OBJ/640/1 Proof of Evidence of Miss N Frost
OBJ/640/2 Miss N Frost - Addendum
OBJ/640/3 Miss N Frost - Photos
OBJ/775/1 Proof of Evidence of Mrs S Bunnell
OBJ/968/1 Proof of Evidence of Mr A & Mrs C Ellis
OBJ/968/1 E-mail dated 24 September 2007
OBJ/1122/1 Proof of Evidence of Mrs J Williams

OBJ/1613/1 Proof of Evidence of Mrs J Hough
OBJ/1613/2 Mrs J Hough - Conclusion of statement
OBJ/1613/3 DVD of "Wales This Week" television programme
OBJ/1878/1 Proof of Evidence of Mr T Sleeman
OBJ/1878/2 Mr T Sleeman - Addendum
OBJ/1879/1 Proof of Evidence of Mr J Maloney
OBJ/1879/2 Mr J T Maloney – Addendum
OBJ/1881/1 Proof of Evidence of Mr B Miller and Mr D Mackie
OBJ/1881/2 Mr B Miller and Mr D Mackie – Photographic Evidence
OBJ/1881/3 Mr B Miller and Mr D Mackie – Addition to statement
OBJ/1882/1 Proof of Evidence of Mrs D Butler
OBJ/1882/2 Mrs D Butler – Addendum to Existing Objection
OBJ/1883/1 Proof of Evidence of Mr M Warburton
OBJ/1883/2 Mr M Warburton - Appendix - Speed Data
OBJ/1884/1 Proof of Evidence of Mr B Perrett
OBJ/1885/1 Proof of Evidence of Mr E Armstrong-Braun
OBJ/1885/2 Mr E Armstrong-Braun - further letter of objection
OBJ/1885/3 Mr E Armstrong-Braun - Appendix – survey data

* Note: These proofs submitted but not presented as the objections were withdrawn.

By Counter Objectors

COBJ/14/1 Proof of Evidence of Mr E Armstrong-Braun - evidence against routes A to C
COBJ/14/2 Mr E Armstrong-Braun - further letter of objection
COBJ/14/3 Mr E Armstrong-Braun - Annex 1 – totals of letters of response to alternative routes
COBJ/14/4 Mr E Armstrong-Braun - Annex 2 – Letter from Richards, Moorehead & Laing Ltd
COBJ/14/5 Mr E Armstrong-Braun - Annex 2a – List of Phase 1 species
COBJ/14/6 Mr E Armstrong-Braun - Appendix – Plan detailing footpaths in area affected by proposed alternative routes
COBJ/14/7 Proof of Evidence of Mr E Armstrong-Braun - evidence against route E
COBJ/14/8 Mr E Armstrong-Braun - Appendix – letter from Saltney Town Council
COBJ/136/1 Proof of Evidence of Cllr I Dunbar

Other Proofs

The following proofs were submitted but not presented and have been taken into account as written representations: -

Supporter

SUPP/9 Inspector A Hughes

Objectors

OBJ/4/1	Mr D & Mrs S Binns
OBJ/18/1	Mr G Sharp
OBJ/32/1	Mr E Ratcliffe
OBJ/41/1	Mr R Lloyd
OBJ/42/1	Mrs M Lloyd
OBJ/45/1	Mr & Mrs J Hill
OBJ/53/1	Mrs J France
OBJ/58/1	Mrs L Perrett
OBJ/69/1	Mrs V Blears
OBJ/74/1	Mr U Dominguez & Mrs A Dominguez (objection 115)
OBJ/119/1	Mrs T Wright
OBJ/147/1	Mrs M Tait
OBJ/161/1	Ms S Pleavin
OBJ/166/1	Mr T & Miss G Bentley
OBJ/316/1	Mr R Bowden
OBJ/317/1	Mrs J Dingle & Mr G Dingle (objection 318)
OBJ/567/1	Mr D Evans
OBJ/574/1	Mr R Waters
OBJ/582/1	Mr E Francis
OBJ/591/1	Mr J Griffiths
OBJ/592/1	Mrs S Griffiths
OBJ/606/1	Mr H Jones
OBJ/612/1	Mrs C Bithell
OBJ/626/1	Mrs C Speed
OBJ/627/1	Mr R Speed
OBJ/632/1	Ms E Burnham AM
OBJ/1221/1	Ms C White
OBJ/1541/1	Mr G Bithell
OBJ/1722/1	Mr D Hough
OBJ/1877/1	Mr J Lever
OBJ/1880/1	Mr R Eaton

Deposit Documents

DD01	Outline Statement of the Welsh Assembly Governments Principal Submissions to be put forward at the Public Local Inquiry
DD02	The Dolgellau to South of Birkenhead Trunk Road (A494) (Drome Corner to Ewloe Improvement) Connecting Road and Slip Road Order 200_ and associated plans and schedules
DD03	The Dolgellau to South of Birkenhead Trunk Road (A494) (Drome Corner to Ewloe Improvement) Side Roads Order 200_ and associated plans and schedules
DD04	The National Assembly for Wales (The Dolgellau to South of Birkenhead

	Trunk Road (A494) Drome Corner to Ewloe Improvement) Compulsory Purchase Order 200_ and associated plans and schedules
DD05	A494 Drome Corner to Ewloe Improvement Environmental Statement
DD06	The Public Notice announcing the publication of both the above draft Connecting Road and Slip Road Order and above draft Side Roads Order
DD07	The Highways Act 1980
DD08	The Public Notice announcing the publication of the above draft Compulsory Purchase Order
DD09	The Environmental Impact Assessment Notice of Determination
DD10	Scheme Assessment Report
DD11	The Explanatory Statement for both the draft Connecting Road and Slip Road Order and the draft Side Roads Order
DD12	The Statement of Reasons for the draft Compulsory Purchase Order
DD13	Letter giving notice of intention to hold a pre-inquiry meeting and Public Local Inquiry
DD14	Public Notice of Intention to hold a Pre-Inquiry Meeting and Public Local Inquiry
DD14A	Public Notice giving details of date, time and venue of Public Inquiry
DD15	North East Clwyd Traffic Study Report (6 volumes)
DD16	Queensferry Transportation Study Report
DD16A	Queensferry Transportation Study – Executive Summary
DD16B	Queensferry Transportation Study - Leaflet
DD17	The Transport Framework for Wales (2001)
DD18	The Trunk Road Forward Programme (2002)
DD19	2004 Supplement to the Trunk Road Forward Programme
DD20	The Wales Spatial Plan (2004)
DD21	Cabinet Statement on the 2004 Transport Review
DD22	Non Technical Summary of the Environmental Statement - December 2006 Revision
DD23	Acquisition of Land Act 1981
DD24	www.betterwales.com (2000)
DD25	Walking and Cycling Strategy for Wales (2003)
DD26	Making the Connections: Delivering Better Services for Wales (2004)
DD27	Driving Wales Forward: A Strategic Review of the Welsh Trunk Roads Programme
DD28	Road Safety Strategy for Wales (2004)
DD29	Wales: A Better Country
DD30	Wales: A Vibrant Economy
DD31	Environment Strategy for Wales
DD32	Road Traffic Reduction (National Targets) Act 1998
DD33	Statement of Results of Public Consultation and Reasons for the Secretary of State's Choice of Preferred Route (April 1993)
DD33A	Press Notice Announcing the Secretary of State's Choice of Preferred Route (April 1993)
DD34	Proof of Evidence of Mr C Tollitt, Part A

DD34A	Proof of Evidence of Mr C Tollitt, Part B
DD34B	Summary Proof of Evidence of Mr C Tollitt
DD35	Proof of Evidence of Mr S Jones
DD35A	Summary Proof of Evidence of Mr S Jones
DD36	Proof of Evidence of Mr I Taylor
DD36A	Summary Proof of Evidence of Mr I Taylor
DD37	Proof of Evidence of Mr S Blunt
DD37A	Summary Proof of Evidence of Mr S Blunt
DD38	Proof of Evidence of Dr G Collins
DD38A	Summary Proof of Evidence of Dr G Collins
DD39	Proof of Evidence of Mr N Triner
DD39A	Summary Proof of Evidence of Mr N Triner
DD40	Proof of Evidence of Mr P Taylor
DD40A	Summary Proof of Evidence of Mr P Taylor
DD41	Design Manual for Roads and Bridges (CD-ROM)
DD42	Local Model Validation Report
DD43	Transport User Benefit Appraisal TUBA Manual
DD44	Report on Traffic Surveys
DD45	Traffic Forecasting Report
DD46	Economic Assessment Report
DD47	National Road Traffic Forecasts (Great Britain) 1997
DD48	TEMPRO Guidance Note version 5
DD49	Highways (Assessment of Environmental Effects) Regulations 1999
DD50	Climbing lane and hard shoulders report
DD51	Construction Environmental Management Plan PLI Draft
DD52	Trunk Road Estate Biodiversity Action Plan (TREBAP) (CD-ROM)
DD53	Guidelines for Landscape and Visual Impact Assessment (2nd Edition)
DD54	Layout Approval Plans
DD55	1992 Public Consultation Brochure
DD56	Alyn and Deeside Local Plan (expired 2003)
DD57	Structure Plan Second Alteration: Flintshire Edition
DD58	Report on 1992 Public Consultation
DD59	Flintshire Unitary Development Plan (2000-2015), Deposit Draft September 2003
DD60	Interim Advice Note IAN 94/07 (W)
DD61	Interim Advice Note IAN 61/05
DD62	Calculation of Road Traffic Noise (CRTN)
DD63	Land Compensation Act 1973
DD64	Noise Insulation Regulations 1975 (SI 1975/1763) + amendment
DD65	Control of Pollution Act 1974
DD66	BS 5228: 1997 - Noise and vibration control on construction and open sites parts 1, 2 & 4
DD67	The Highways (Inquiries Procedure) Rules 1994
DD68	BS 6472: 1992 Guide to evaluation of human exposure to vibration in

	buildings
DD69	BS EN ISO 9001:2000 Quality management systems - Requirements
DD70	BS EN 14001:2004 Environmental Management Systems - Requirements with guidance for use
DD71	OHSAS 18001:1999 Occupational health & safety assessment
DD72	Environment Agency - Pollution Prevention Guidelines parts 5, 6, 7 & 21.
DD73	Public Liaison Strategy Document
DD74	Responses by subject to A494 Drome Corner to Ewloe Improvement scheme objections
DD75	A494 Drome Corner to Ewloe Responses to issues raised in non-circular letters
DD76	The Environment Act 1995 part 4
DD78	The Compulsory Purchase by Ministers (Inquiry Procedure) Rules 1994
DD79	The Air Quality Standards (Wales) Regulations 2007
DD80	Departures from Standards report
DD81	Stage 1 Road Safety Audit
DD81A	Designers response's to Stage 1 Road Safety Audit
DD82	EC Directive 85/337
DD83	EC Directive 97/11/EEC
DD84	Disability Discrimination Act 2005
DD85	TRL Contractors Report 143 – 1985
DD86	Interim Requirements for Road Restraint Systems Rev1 (2004) (IRRRS)
DD87	Ewloe Interchange Traffic Survey Report
DD88	A5117 Deeside Park Junctions Improvement Traffic Forecasting Report
DD89	A New Approach to Deriving NO_2 from NO_x for Air Quality Assessments of Roads, Laxen and Wilson, 2002
DD90	Planning Policy Wales (2002)
DD91	Technical Advice Note 12: Design (2002)
DD92	Technical Advice Note 18: Transport
DD93	Public Consultation Brochure for the A55 Ewloe to Northop Improvement
DD94	Plan No 36057-SK267A Alternative routes and associated traffic figures
DD95	Planning Policy Wales Companion Guide (2006)
DD96	Inspectors report for The A550 Trunk Road (Improvement between Deeside Park and Ledsham) draft Orders 199
DD97	Letter from the Transport Minister Ieuan Wyn Jones addressed to Mark Isherwood AM, Dated 29 August 2007 and copied to Mr J Butler, containing references to VOSA and costings for the Inquiry
DD98	Response to FOI request made by Mr John Butler quoting details of costings for the Inquiry

APPENDIX C

GLOSSARY

µg/m^3	Micrograms per cubic metre
AADT	Annual Average Daily Traffic
ADR	Aston Distributor Road
ANPR	Automatic Number Plate Recognition
AQMA	Air Quality Management Area
BCR	Benefit to Cost Ratio
CCTV	Closed Circuit Television
CCW	Countryside Council for Wales
CEMP	Construction Environmental Management Plan
CHS	Children's Health Study
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COBA	Cost Benefit Analysis
CPO	Compulsory Purchase Order
CRF	Congestion Reference Flow
CRTN	Calculation of Road Traffic Noise
D2AP	Dual 2-lane All Purpose
dB	Decibel
DDA	Disability Discrimination Act
DEFRA	Department for Environment, Food and Rural Affairs
DM	Do Minimum
DMRB	Design Manual for Roads and Bridges
DS	Do Something
EIA	Environmental Impact Assessment

ES	Environmental Statement
EU	European Union
FCC	Flintshire County Council
Ha	Hectare
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
KgN	Kilograms of Nitrogen
LDP	Local Development Plan
LPA	Local Planning Authority
mph	Miles per hour
mvkm	Million vehicle kilometres
NAEI	National Atmospheric Emissions Inventory
NDC	New Dee Crossing (also known as the Flintshire Bridge)
NECTS	North East Clwyd Traffic Study
NO_2	Nitrogen dioxide
NO_x	Oxides of Nitrogen
NPV	Net Present Value
NRTF	National Road Traffic Forecasts
NTS	Non-Technical Summary
NWP	North Wales Police
pia	Personal injury accident
PM_{10}	Particulate matter of diameter less than 10 microns (µm)
$PM_{2.5}$	Particulate matter of diameter less than 2.5 microns (µm)
QUADRO	Queues and Delays at Road works
RFC	Roundabout Flow Capacity

RMS	Route Management Strategies
RPG	Regional Planning Guidance
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SRO	Side Roads Order
SSSI	Site of Special Scientific Interest
TEN	Trans European Network
THC	Total Hydrocarbons
TREBAP	Trunk Road Estate Biodiversity Action Plan
TRFP	Trunk Road Forward Programme
TRO	Traffic Regulation Order
TRP	Trunk Roads Plan
TUBA	Transport User Benefit Appraisal
UDP	Unitary Development Plan
UFP	Ultra Fine Particle
VOSA	Vehicle and Operator Services Agency
vpd	Vehicles per day
WHO	World Health Organisation
WLGA	Welsh Local Government Association
WTS	Wales Transport Strategy