Inverclyde council

AGENDA ITEM NO. 9

Report To:	**ENVIRONMENT & REGENERATION COMMITTEE**	**Date: 27 OCTOBER 2016**
Report By:	**CORPORATE DIRECTOR, ENVIRONMENT, REGENERATION & RESOURCES**	**Report No: ERC/ENV/RG/16.289**
Contact Officer:	**ROBERT GRAHAM**	**Contact No: 01475 714854**
Subject:	**BRIDGEND ROAD, GREENOCK – FEASIBILITY REPORT FINDINGS**	

1.0 PURPOSE

1.1 The purpose of the report is to advise the Committee of the outcome of a feasibility study which looked at the traffic congestion experienced on Bridgend Road, Greenock adjacent to Lady Octavia Sports Centre.

2.0 SUMMARY

2.1 In March 2016 congestion on Bridgend Road adjacent to the Sports Centre access, Castle Road and the traffic calming measures caused significant concerns for the public and Ward Members. The initial reaction was to remove the traffic calming features to allow traffic to flow more freely. However, as these were constructed following road safety concerns it was agreed that a feasibility study be undertaken to understand the problems at this location, identify potential solutions and recommend a preferred solution.

2.2 The report provides a number of options that were developed and assessed in terms of their strengths and weaknesses against the desired outcome to reduce the traffic congestion in the area.

2.3 The estimated cost of the Options A to F are as detailed in Appendix 1.

2.4 The full Feasibility Study is as detailed in Appendix 2.

3.0 RECOMMENDATIONS

3.1 That the Committee note the findings and recommendations within the Feasibility Study.

3.2 That the Committee agree to progress with the detailed design of Options D and F as outlined in Appendix 1.

3.3 That it be remitted to the Head of Environmental and Commercial Services and the Head of Legal and Property Services to prepare a detailed design, tender documentation and to seek competitively tendered prices for Options D and F with the costs to be contained within Roads Asset Management Plan and Property Services General Provision.
This provision will displace other projects within these funding streams.

Robert Graham
Head of Environmental and Commercial Services

4.0 BACKGROUND

4.1 Lady Octavia Sports Centre was granted planning approval in 1991. However, the outdoor sports facilities were constructed in approximately 2009. Within the overall facility there are 20 designated bays at the front of the Sports Centre and a car park to the south side of the Sports Centre which is unmarked but can accommodate approximately 26 parking spaces. This is a total of 46 spaces for the overall facility.

4.2 The Sports Centre is used for its gym, fitness classes and children's parties. It is also used 2 nights per week by East End United Football Club.

4.3 Following changes to the school catchment areas in the east end of Greenock in the early 2000s some children attending Kings Oak and All Saints Primary schools had to walk along a narrow footway between the live and disused railway lines on Bridgend Road. To allow the widening the footway and make this location safer for all road users, traffic calming was introduced in the form of chicanes to the north and south of the bridges. These give priority to one lane of traffic over another.

4.4 In March 2016 following congestion issues Elected Ward Members asked for steps to be taken to address this. Their comments were:

- The S-bend on Bridgend Road between the two railway bridges cause congestion, particularly at the south end i.e. adjacent to the Sports Centre and Castle Road.
- The entrance to the Sports Centre is too close to the traffic calming feature.
- Vehicles park on both sides of Bridgend Road near the Sports Centre.
- Tuesdays at approximately 18:00 hours are the most congested. East End Football Club has training sessions at this time and as one session ends, another begins, so there is an overlap with parents dropping off and picking up. Fitness classes also start and end at the same time, so there is lots of activity in and around the Sports Centre.

4.5 As a result of these concerns the Roads Service commissioned a feasibility study to identify the issues leading to the congestion at this location. SIAS Limited were commissioned to undertake the feasibility study.

4.6 A series of traffic surveys were undertaken in June and August 2016. They were:

- Pedestrian counts: Monday 14 June 2016
- Automatic Traffic Counts (ATCs): Saturday 11 to Friday 17 June 2016
- Parking accumulation: Saturday 11, Thursday 16, and Friday 17 June 2016
- Classified turning counts: Tuesday 23 August 2016
- Parking accumulation: Tuesday 23 August 2016

4.7 Site visits were also undertaken by SIAS as follows:

- AM peak: Wednesday 22 June 2016
- PM peak: Tuesday 28 June 2016
- Evening peak: Tuesday 23 August 2016

PEDESTRIAN SURVEY FINDINGS

4.8 Over the 12 hour period in which the pedestrian surveys were carried out:

- The total pedestrian flow was 422
- The highest pedestrian flow was in the northbound direction with 238 pedestrians; the southbound flow was 184 pedestrians
- Able bodied adults made up the majority of the two-way flow with 291 pedestrian
- recorded (69%):
- Children accounted for 124 of the two-way flow total (29%)

- Elderly/disabled accounted for 7 of the two-way flow total (2%)
- Northbound, children accounted for 33% of the total flow and 25% of the total southbound flow
- In the period 08:30 – 09:00 hours, children accounted for 62% of the total two-way flow (28) with adults making up the remaining 38% (17)
- In the period 15:00 – 15:30 hours, children accounted for 37% of the total two-way flow (17) with adults and elderly/disabled making up the remaining 63% (29)

4.9 The results show that the pedestrian activity is predominantly made up of adult movements, with the exception of the start of the school day (08:30 – 09:00 hours) when children make up 62% of the flow.

4.10 The peak activity occurs at the start and end of the school day. There is also more activity from 16:00 – 20:30 hours than there is during the day between the school peaks, when activity is low.

4.11 The volume of pedestrian activity is considered to be low in absolute terms, with short peaks in activity connected specifically to the start and end of the school day. The early evening activity could be related to usage of the sports centre.

Road Accidents

4.12 A review of Road Accidents over a three year period was undertaken for the study area. This review highlighted that no road accidents have been recorded.

Traffic Flow Data

4.13 Automatic traffic counts (ATC) were undertaken from Saturday 11 to Friday 17 June 2016 at 3 locations on Bridgend Road:

- Site 1 - North of Gilmour Street
- Site 2 - Between the 2 S-bends
- Site 3 - South of Castle Road

4.14 The peak traffic flows were between 08:00-09:00 hours in the AM and 17:00-18:00 hours in the PM with a second PM peak at school closing time between 15:00-16:00 hours.

4.15 The traffic flows, at less than 300 vehicles per hour in the peak, are considered to be relatively low.

Traffic Speed Data

4.16 The ATCs detailed in 4.13 also collected traffic speed data. The data collected allowed the mean and average speeds at each of the locations. The speeds are detailed in the table below:

Location	**Mean Speed**	**85th Percentile Speed**
North of Gilmour Street	21.6	26.5
Between the 2 S-bends	18.5	20.6
South of Castle Road	19.9	23.7

4.17 The data shows that traffic speeds generally do not exceed the 30mph speed limit of the road. The speeds are lowest at Site 2, between the two bridges, which suggests the S-bends, build out and 'chicane' effect reduces traffic speeds and act as a traffic calming measure.

4.18 Traffic speeds are also considered to be low at Site 3, south of Castle Road; this could be due to the presence of on-street parking which acts as a traffic calming measure.

4.19 The highest speeds are at Site 1, north of Gilmour Street, where the road is relatively

wide and straight in comparison to Site 2 and Site 3. Even at this location, the speeds are considered to be relatively low.

Parking Surveys

4.20 Parking surveys were undertaken in June and August 2016 to review the use of parking within and around the Sports Centre. The surveys monitored parking locations and durations throughout the survey periods. The study area was split into five on-street parking areas, two car parks and one on-road area within the car park as shown in page 20 of Appendix 2. Appendix 2

4.21 The car parking results are summarised as follows:

- On-street parking takes place throughout the day in Areas 3 and 5.
- The demand for on-street parking in Area 2 fluctuates day by day, and by time of day.
- There is strong evidence of 'illegal' parking in Area 1 on a day-by-day basis.
- During the August 2016 surveys Car Park 1 (the Sports Centre's front car park) regularly had an occupancy of 100% during peak periods and, from 17:45 – 18:00 hours and 18:45 – 19:00 hours, the occupancy was 105% which indicates cars were parked outwith designated parking bays e.g. on the grassed area or footpaths. Although well used in June 2016 the car park was not as busy as it was during the August 2016 survey.
- The occupancy of Car Park 2 (the Sports Centre's rear car park) fluctuated during the day; there were times when no cars were observed parking while, at other times, its occupancy was greater than 100%, reaching a peak of 173% between 17:45 – 18:15 hours during the August 2016 surveys. Although well used in June 2016 the car park was not as busy as it was during the August 2016 survey.
- The peak occupancy at the Sports Centre was:
  - Saturday 11 June 10:30–15:45 hours Car Park 1 generally > 90% occupancy
  - Monday 13 June 17:30–21:00 hours within Car Park 1 & 2, On Road internal and Areas 1 and 2 experiencing their highest occupancy during these periods, at times in excess of 100%.
  - Thursday 16 June 17:00–21:15 hours, with a similar pattern to the Thursday, but with generally lower occupancy levels over a shorter duration.
  - Tuesday 23 August 17:45–18:00 hours estimated at 100 vehicles.
- The greatest overall parking demand was estimated at 144 cars between 18:30–18:45 hours during the August 2016 surveys.
- The greatest demand for Sports Centre parking was estimated at 100 vehicles between 17:45–18:00 hours during the August 2016 surveys.

Site Visit Observations

4.22 Site visits where undertaken in the study area at the following dates and times:

AM Peak: Wednesday 22 June 2016 between 08:00 – 10:00 hours
PM Peak: Tuesday 28 June 2016 (with no football training)
Evening Peak: Tuesday 23 August 2016 (with football training)

4.23 From the on-site observations during the AM peak period, the road network was considered to operate satisfactorily. The footfall of children and parents on their way to school was not significant, and the network appeared to be safe for all users.

4.24 The findings of the June PM site visit (with no football training) were the same as those for the AM. Although there were delays to through traffic at the build outs and on Bridgend Road opposite the Sports Centre, these did not lead to congested conditions, while the delays were regarded as not being operationally significant. The footfall of children and parents on their way home from school was not significant, and the network appeared to be safe for all users.

4.25 The operation of the August PM peak (with football training) appeared to be dominated

by the users of the Sports Centre. The majority of drivers who parked in Area 2 (Bridgend Road west opposite the Sports Centre) were observed to go to the Sports Centre and chose to park on-street rather than in the Sports Centre's car park. 'Illegal' parking was also observed along Area 1 (Bridgend Road east from the Sports Centre's junction to Kilcreggan View). Again, the majority of drivers were observed as users of the Sports Centre.

4.26 A junction turning count survey was undertaken on Tuesday 23 August 2016. This recorded the number of vehicles at the staggered junction of Bridgend Road/Castle Road/Sports Centre access.

4.27 The predominant flow to/from the Sports Centre is from the North with 75% to 80% of all trips from that direction.

4.28 The total number of trips in and out of the Sports Centre was 65 trips in and 69 trips out.

4.29 While the peak hour flow of 364 vehicles passing through the junction could be considered to be relatively low in an urban context, the physical constraints within the network clearly lead to operational conditions that are unsatisfactory.

Research Findings

4.30 Although there may be perceptions that the study area is dangerous and that traffic speeds and volume can be high, the data does not support this view. Speeds are generally less than 30mph and there are no recorded accidents in the past 3 years.

4.31 From impartial, on site observations undertaken by the study team, the network was considered to operate satisfactorily at the start and end of the school days. Although the traffic calming features do delay traffic, that is their purpose and, in combination with the poor forward visibility at the S-bends, traffic speeds are observed to be low in absolute terms.

4.32 Conditions change in the early evening peak which seems to coincide with activity related to the Sports Centre.

4.33 When East End United Football Club do not have training, the network becomes busier, but was considered to operate satisfactorily. There were increased instances of delays to through traffic on Bridgend Road due to more cars parking on-street, especially in Area 2 directly opposite the Sports Centre. Delays were considered to be sporadic and short lived, however, it appeared to contribute towards keeping traffic speeds low on Bridgend Road.

4.34 Cars parking on the footway in Area 1 (south of the Sports Centre access) caused an obstruction to pedestrians.

4.35 When East End Football Club does have training, the operation of the network was considered to 'breakdown', with traffic regularly coming to a halt in both directions on Bridgend Road as there was no road space available. Similar conditions were apparent within the Sports Centre, with the internal road frequently blocked due to oncoming vehicles being unable to pass each other due to 'illegally' parked cars.

4.36 Cars were also parked on Bridgend Road's eastern footway, to the south of the Sports Centre, over a distance of approximately 120m, which led to pedestrians either having to walk on the carriageway or grassed area to the rear.

4.37 The fact that the predominant flow to and from the Sports Centre is from the north, with 80% of all trips coming from the north and 75% leaving the car park to travel north, has a bearing on possible solutions as it draws the centre of traffic activity towards the Castle Road junction and the traffic calming at that location.

Operational Options

4.38 The key issues to be addressed are considered to be:

- Congestion within the Sports Centre car park which leads to:
    - An overspill of parking onto Bridgend Road.
    - Queuing back within the car park back to the access junction. This prevents cars from entering the car park and subsequently causes congestion on Bridgend Road.
- Parking on the eastern footway on Bridgend Road which leads to pedestrians having to walk either on the carriageway or grassed area.
- Parking on the corner of Bridgend Road/Castle Road which takes up road space on Bridgend Road and contributes to the congestion in and around the junction.

4.39 Any engineering solutions should therefore seek to address one or more of the following issues:

- Improve car parking within the Sports Centre car park.
- Rationalise the access and egress arrangements at the Sports Centre to at least remove some traffic from its junction with Bridgend Road/Castle Road.
- Address the issue of on-street parking on Bridgend Road to discourage cars from parking on the footway.

5.0 OPTIONS

Option 1: In only at Existing North Junction and Out only at New South Junction

5.1 This Option sees a new additional access formed to the Sports Centre which separates the in and out movements, with the in only at the existing north junction and out only at the new south junction.

5.2 This option reduces the number of movements at the existing access junction by 17 vehicles but increases the two way flow on Bridgend Road, south of the existing junction, by 35 vehicles.

5.3 While this option may benefit the existing access junction, it may cause more congestion on Bridgend Road to the south as there will be more traffic activity in that area.

Option 2: Out only at Existing North Junction and In only at New South Junction

5.4 This Option sees a new additional access formed to the Sports Centre which separates the in and out movements, with out only at the existing north junction and in only at the new south junction.

5.5 This option reduces the number of movements at the existing access junction by 13 vehicles, but increases the two way flow on Bridgend Road, south of the existing junction, by 39 vehicles.

5.6 While this option may benefit the existing access junction, it may cause more congestion on Bridgend Road to the south as there will be more traffic activity in that area.

Option 3: Two-Way Operation at Both Junctions – assumed vehicles use access closest to their direction of travel

5.7 With this option where would be a new additional access to the Sports Centre. Drivers would have the choice of which entry/exit to use and both would be two way operation.

5.8 For the purposes of this exercise, it has been assumed that drivers use the junction nearest to their direction of travel, so all trips to/from the north use the northern junction and those from the south use the southern junction.

5.9 In reality, this could mean driving through the car park to get to their destination, although this is effectively how the current layout operates.

5.10 This option reduces the number of movements at the existing access junction, and the two way flow on Bridgend Road south of the existing junction, by 30 vehicles.

5.11 This option would appear to bring about benefits as it reduces vehicle movements at both locations, however, it has to be noted that drivers would have a choice of which entry/exit they wanted to use.

Option 3A: Two-Way Operation at Both Junctions – assumed vehicles use access closest to their desired car park

5.12 In 5.7 – 5.11, above, it is assumed that vehicles will use the entrance closest to their trip origin, however, in reality, if a driver's destination is Car Park 2 then they may choose to enter/leave from the southern junction, as opposed to driving through the Car Park 1.

5.13 This would result in different traffic movements. This Option considers a different distribution of trips, with 33% using the existing northern junction and 66% using the new southern junction. This gives a better reflection on where the parking spaces are actually located within the two car parks.

5.14 This assumption reduces the number of movements at the existing access junction by 20 vehicles, but increases the two-way flow on Bridgend Road south of the existing junction by 50 vehicles.

5.15 While this distribution of trips would benefit the existing access junction, it may cause more congestion on Bridgend Road to the south of the existing access, as there will be more traffic activity in that area.

5.16 All Options have a number of merits but also issues associated with them.

5.17 Options 1 and 2 have no driver choice so it is easier to predict resulting traffic movements were either to be implemented.

5.18 Option 3 has driver choice and so the resulting traffic movements cannot be known, as it could either reduce or increase the amount of traffic activity on Bridgend Road south of the existing access.

5.19 All options reduce traffic movements at the northern junction.

5.20 Options 1 and 2 would lead to an increase in traffic movements on Bridgend Road south of the existing junction. Although this may also be the case with Option 3, it is also possible that traffic movements would be reduced, depending on drivers' route choice.

5.21 It is considered that the implementation of Option 3 provides the best likelihood for reducing congestion in the study area.

Options considered but discounted

5.22 Several options were considered but discounted as part of this study. They were:

5.23 Changes to the existing traffic calming
The current builds outs (horizontal traffic calming) seem to be effective in slowing vehicle speeds but they prevent simultaneous two-way operation which does contribute the congestion at the Bridgend Road/Castle Road/Sports Centre junction during busy periods.

5.24 The possibility of changing the traffic calming from horizontal to vertical (speed cushions) has been considered. Vertical features would raise vehicle heights as they pass over the traffic calming. The implications are that this type of feature would heighten the risk of bridge collisions when high vehicles negotiate the vertical traffic calming. For this reason the provision of vertical traffic calming measures, such as speed cushions, has not been taken forward.

5.25 The existing horizontal traffic calming measures are effective as they work throughout the day. The congestion experienced at the southern traffic calming feature adjacent to Bridgend Road/Castle Road/Sports Centre junction is short lived in that context, in that it only occurs for approximately one hour over 2 or 3 evenings per week during the football season.

5.26 It is therefore recommended that there are no changes to the existing horizontal traffic calming measures, and the existing build outs remain in place.

5.27 <u>'Straighten Out' the S-bends</u>
While these can be difficult or awkward for drivers to negotiate because of the geometry and restricted forward visibility, they contribute towards low traffic speeds. Furthermore, as there were no recorded accidents during the last three years, they do not appear to constitute a safety hazard.

5.28 'Straightening out' the S-bends would present a significant engineering challenge, not least because of the live railway that operates over the southern bridge, which would involve third party land belonging to Network Rail.

5.29 The costs associated with this scheme would also be significant. It is therefore recommended that the alignment of the S-bends is not altered.

5.30 <u>Widen Bridgend Road</u>
As there is no tenable reason for widening under the railway bridges and straightening out the S-bends, widening Bridgend Road in itself would not address the issues of congestion as the bottleneck at the bridges and S-bend would remain.

5.31 Widening would only be effective if it was implemented from Kilcreggan View to Gilmour Street, and included the two bridges and the S-bends. This would result on a relatively straight, downhill section which could lead to other road safety issues such as higher speed, especially northbound downhill. Speed is a major contributing factor to severity of injury in road accidents and widening Bridgend Road from Kilcreggan View to Gilmour Street is likely to result in increased traffic speeds, particularly northbound.

5.32 It is therefore recommended that widening Bridgend Road from Kilcreggan View to Gilmour Street is not taken forward.

Options Considered

5.33 A number of options were therefore considered as set out below and in Appendix 1:

5.34 <u>Option A</u>
Create a second vehicular access to the Sports Centre, further south on Bridgend Road. This would operate as an exit only, while the existing junction to the north would be an entry only.

5.35 <u>Option B</u>
Create a second vehicular access to the Sports Centre, further south on Bridgend Road. This would operate as an entry only, while the existing access to the north would be an exit only.

5.36 <u>Option C</u>
Create a second vehicular access to the Sports Centre further south on Bridgend Road. Both the existing and new access would operate as two-way.

5.37 <u>Option D</u>
Provide additional on-street parking on the east side of Bridgend Road with the provision of parallel parking bays.

5.38 <u>Option E</u>

Introduce a Traffic Regulation Order on the east side of Bridgend Road from the railway bridge to Kilcreggan View.

5.39 Option F
Develops on Option C while also seeking to address the shortage of parking spaces currently witnessed during the busier periods of the Sports Centre. As with Option C, a secondary access would be formed from Bridgend Road to the south of the existing Sports Centre junction. In conjunction with the secondary access, the in-curtilage parking provision would be increased by extending the rear car park to the south and maximising the number of parking spaces that could feasibly be created.

5.40 Consideration was given to relocating the East End United Football Club changing rooms and what benefit this could achieve in terms of parking provision.

5.41 On site observations suggest that during the peak periods of activity, there is a demand for approximately 99 parking spaces. At present there are approximately 50 parking spaces available within the curtilage of the Sports Centre, equating to an approximate shortfall of 49 spaces. This shortfall is currently accommodated through a combination of overcrowding of the rear car park, cars parking along the internal roads, parking in non-designated areas within the front car park and on-street parking along the east side of Bridgend Road.

5.42 Whilst retaining the East End United Football Club changing room at its current location, it would be possible to provide 109 parking spaces within an extended curtilage of the Sports Centre.

Travel Planning Measures

5.43 The findings of the study have shown that the current demand for parking outweighs the existing supply. Although it has been identified that more spaces can be provided, and the circulation within the site could be improved, these issues would not, in themselves, address the demand for parking spaces at the Sports Centre.

5.44 An engineering based solution could be complemented with demand management initiatives that should include:

- promotion of car share amongst players at East End United Football Club to increase the number of children per car. This is something the club could encourage and introduce on an informal basis, e.g. friends and team mates travelling together.
- stagger the start and end times of their sessions, e.g. Session 1 ends 18:30 hours, Session 2 starts 18:40 hours in an attempt to dilute the effect of drop off/pick up trips.
- the Sports Centre should review their timetable, e.g. 5-a-side football times staggered with East End United Football Club training and other activities at the sports centre to dilute the effect at change over times.

5.45 These types of initiatives would act to reduce the number of car trips, and so lead to an improvement in conditions within the study area.

5.46 Discussions could be entered into between all parties to encourage changes in the operation of the Sports Centre and East End United Football Club to the benefit of all users.

6.0 RECOMMENDATIONS

6.1 Options D and F are the recommended options as they address the activity currently taking place at the existing access and also the shortfall in parking spaces. This is achieved by creating a second access to the sports centre and extending the area of the rear car park. This would provide a total of 109 in-curtilage parking spaces.

This option would reduce the vehicular activity currently taking place at the existing access and the interaction with Castle Road and the railway bridge. The addition of On-Street parking bays on the east side of Bridgend Road and the implementation of on-

street parking restrictions would address the parking that currently takes place along the footway on the east side of Bridgend Road and at its junction with Castle Road.

Should Options D and F be progressed, it is recommended that a number of additional studies are carried out to determine the soil mechanics of the land to the south and also any additional drainage requirements. This would be carried out at the same time as the detailed designs were being developed.

Travelling planning measures should also be investigated to try to dilute the effect of the numerous activities taking place at the Sports Centre.

7.0 IMPLICATIONS

Finance

7.1 The one off cost will include the detailed design of the scheme including a survey of the soil conditions and any additional drainage requirements. No funding is currently allocated to this project, it is proposed that the Design/Feasibility works will be contained within the Roads Assessment/Feasibility budget with the remaining works being topsliced from Roads Asset Management Plan and Property Services General Provision future years (2017-19) allocations.

One Off Costs

Cost Centre	Budget Heading	Budget Years	Proposed Spend this Report	Virement From	Other Comments
	Roads Assessment /Feasibility	16/17	£25,000		
	Capital (Property Services)Capital (Roads)	17/19	£140,000		For works within Lady Octavia Sports Centre
		17/19	£100,000		For works on Bridgend Road

Legal

7.2 Engagement with Inverclyde Leisure will be required with regard to their contract arrangements with the Council in terms of the scheme's impact on their business.

Human Resources

7.3 There are no HR implications arising from this report.

Equalities

7.4 There are no equality issues arising from this report.

Repopulation

7.5 There are no repopulation implications arising from this report.

8.0 CONSULTATIONS

8.1 The Head of Legal and Property Services and the Chief Financial Officer have been consulted on this report.

9.0 LIST OF BACKGROUND PAPERS

9.1 Appendix 2 - Bridgend Road, Greenock Feasibility Study

Appendix 1

Option	Strengths	Weaknesses	Cost Estimate
<u>Option A</u> • Create a second vehicular access to the Sports Centre, further south on Bridgend Road. • Existing access entry only. • New access exit only.	• A new second point of access to the sports centre will reduce the level of activity at the existing junction which will reduce the number of potential conflicts that arise. • A new second access to the south may also improve the use of the rear car park and should remove some on-street parking. • It is unlikely to be have a significant benefit on football training nights, as the car park already operates over capacity. • While this is the critical period in terms of activity at the sports centre, this only occurs for a 'relatively' short period of time and only on 2 to 3 evenings out of the week during the football season.	• Operating a one-way in and out will increase the volume of northbound traffic on Bridgend Road between the existing and new junction, which is a potential road safety risk during busier periods at the Sports Centre. • From the results of the traffic survey this arrangement would result in 52 vehicles turning right to exit the Sports Centre and passing through the 'bottleneck' section. • Two points of access would not address the shortfall in parking provision within the Sports Centre and on-street.	• Costs to be confirmed but will be in the region of £102,175.
<u>Option B</u> • Create a second vehicular access to the Sports Centre, further south on Bridgend Road. • Existing access entry only. • New access exit only.	• A second point of access to the Sports Centre will marginally reduce the level of activity currently experienced at the existing access. This will reduce the number of potential conflicts that arise at that location.	• This option will increase the volume of (southbound) traffic on Bridgend Road between the existing and new junction, which is a potential road safety risk during busier periods at the Sports Centre. • The traffic survey indicated that 52 cars turn left into the existing access. These would now pass through this 'bottleneck' section. • Two points of access would not address the shortfall in parking provision within the Sports Centre and on-street.	• Costs to be confirmed but will be in the region of £102,175.
<u>Option C</u> • Create a second vehicular access to the Sports Centre further south on Bridgend Road. • Both accesses would operate as two-way.	• As with Options A and B, having two points of access would reduce the level of activity currently taking place at the existing access. It could also result in a reduction in traffic movements at the 'bottleneck' section of Bridgend Road depending on which entry or exit drivers chose to use.	• This option would not address the shortfall in parking provision in both car parks within the site and on-street. This means the current problems will continue, requiring pedestrians to use either the verge or carriageway. • This option could result in an increase in traffic movements at the 'bottleneck' section of Bridgend Road, depending on which entry or exit drivers choose to use.	• Costs to be confirmed but will be in the region of £101,200.

Option	Strengths	Weaknesses	Cost Estimate
<u>Option D</u> • Creation of parking layby for 7 vehicles. • Introduce a TRO on the east side of Bridgend Road from the railway bridge to Kilcreggan View (excluding extent of parking layby).	• A formal parking lay-by on Bridgend Road would remove vehicles from parking on the footway on the east side of Bridgend Road. • Pedestrians and the mobility impaired would no longer have to walk on the carriageway or verge.	• A parking lay-by would not address the level of activity and congestion that can occur at the existing access. • The lay-by is unlikely to increase the attractiveness of using the sports centre car park (particularly the area to the rear). • It would not address the shortfall in parking numbers within the Sports Centre.	• Costs to be confirmed but will be in the region of £81,200.
<u>Option E</u> • Introduce a TRO on the east side of Bridgend Road from the railway bridge to Kilcreggan View.	• TROs encompass the footway which means parking on the footway could be enforced. • If a TRO was to be implemented, it would remove (or at least reduce) the level of on-street parking that takes place and make conditions easier for pedestrians and mobility impaired. • The introduction of a TRO would allow these vehicles to be given penalty notices. • The TRO at the Bridgend Road/Castle Road junction would be implemented to prevent cars parking at that location and so free up road space.	• A TRO is subject to a statutory process that involves consultation with a number of parties. Unfortunately, it is not possible to guarantee the success of a TRO as it is subject to the outcome of the consultation process. • Introducing parking restrictions within residential areas can move the 'problem' to another area which in turn can lead to objections and complaints from other residents. • Parking restrictions are only effective with continued enforcement by Parking Attendants. Parking in the study area in general appears to be unrestricted and enforcing these parking restrictions would likely be on an ad-hoc basis. • The main issues regarding on-street parking occur outwith the current hours of enforcement. It is understood these hours could be reviewed to encompass the periods of peak demand associated with the Sports Centre.	• The cost to implement a TRO is estimated at between £1,500 to £2,500.

Option	Strengths	Weaknesses	Cost Estimate
<u>Option F</u> • Create a second vehicular access to the Sports Centre south on Bridgend Road. • Both accesses would operate as two-way. • Create more parking within the Sports Centre. • Introduce a TRO on the east side of Bridgend Road from the railway bridge to Kilcreggan View.	• Two points of access from Bridgend Road would reduce the level of parking currently taking place at the existing access. • The indicative layout demonstrates that by extending the limits of the rear car park and creating additional parking within the existing car park, it would be possible to create a total of 109 parking spaces. • This option retains the East End United Football Club changing room in its current location. • Providing perpendicular parking spaces along the southern boundary of the internal roads should discourage drivers from parking on the access road. • Relocating the changing rooms would provide an opportunity to create a further four spaces on its current location. While the overall costs to relocate the changing room are unknown at this time (demolition of existing building, sever/terminate existing utility connections, construction of a new building, new utility connections), the 'cost to benefit' relationship may not justify relocating the changing rooms. • The introduction of a TRO at the Bridgend Road/ Castle Road junction would free up road space.	• While extending the car park will address the shortfall of parking spaces currently experienced at the Sports Centre, the location of the new car park would be remote to the Sport Centre's entrance. • The relationship between the car park and entrance may discourage the effective use of the new car park, potentially resulting in some visitors continuing to park on the Bridgend Road footways or at inappropriate locations within the car park. • A TRO would be required to deter drivers from parking on the footway along the east side of Bridgend Road. The challenges of successfully implementing and enforcing a TRO have been discussed in above in Option E. • The topography of the area to the south of the rear car park is relatively steep so extending the car park could potentially require a significant amount of excavation. • The gradient may require some form of retaining structure along the southern boundary of the extended car park. • It may be possible to address this gradient by re-grading the land to the south however topographical survey work would be required to better understand the ground levels. • It may be prudent to undertake a soil investigation study to confirm soil conditions and the geotechnical properties prior to any design or construction work. • Extending the car park will affect the drainage characteristics of this area. It may be prudent to undertake a drainage impact assessment in order to fully understand the drainage requirements.	• Costs to be confirmed but will be in the region of £159,150. • The cost to implement a TRO is estimated at between £1,500 to £2,500.

Bridgend Road, Greenock, Inverclyde

Inverclyde Council

Feasibility Study

TPXICBE1/78379
September 2016

BRIDGEND ROAD, GREENOCK, INVERCLYDE

Description:	**Feasibility Study**
Date:	**29 September 2016**
Project Manager:	**Allan Spence**
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BRIDGEND ROAD, GREENOCK, INVERCLYDE

CONTENTS :

BRIDGEND ROAD, GREENOCK, INVERCLYDE

FIGURES :

BRIDGEND ROAD, GREENOCK, INVERCLYDE

TABLES :

1 INTRODUCTION

1.1 Background

Bridgend Road, Greenock, is a two-way residential distributor road and bus route. It connects the Bridgend and Strone areas of Greenock and is used by vehicles travelling from the A8 East Hamilton Street to B788 Kilmacolm Road.

Inverclyde Council (IC) has commissioned a study into the transport characteristics of the area.

At the study area, Bridgend Road is an S-shape bend passing under a live railway line and a disused railway line; forward visibility is poor. Due the re-allocation of the school catchments in this area at that time, parents and teachers raised concerns about pupil safety at the S-bends, therefore, horizontal traffic calming and footway widening was introduced in 2004.

In recent years, due to the increased use of Lady Octavia Sports Centre to the south of the S-bends, congestion on Bridgend Road adjacent to the Sports Centre has increased. This situation is not helped by the on-street parking on Bridgend Road south of the S-bends, where no off-street parking is available to residents.

1.2 Scope of Work

The purpose of the study is to find a solution to the congestion and traffic delays encountered on Bridgend Road.

IC commissioned a series of surveys to help understand existing conditions in the study area.

2 STUDY AREA

2.1 Description of Study Area

The study area is shown in Figure 2.1.

Bridgend Road is subject to a 30mph speed limit within the study area. There is on-street parking along its length.

Bus service 540/545 operates along its length on a 30 minute frequency during the weekday.

King's Oak Primary school lies to the north on Crawford Street, while All Saints Primary School is to the south on Blairmore Road.

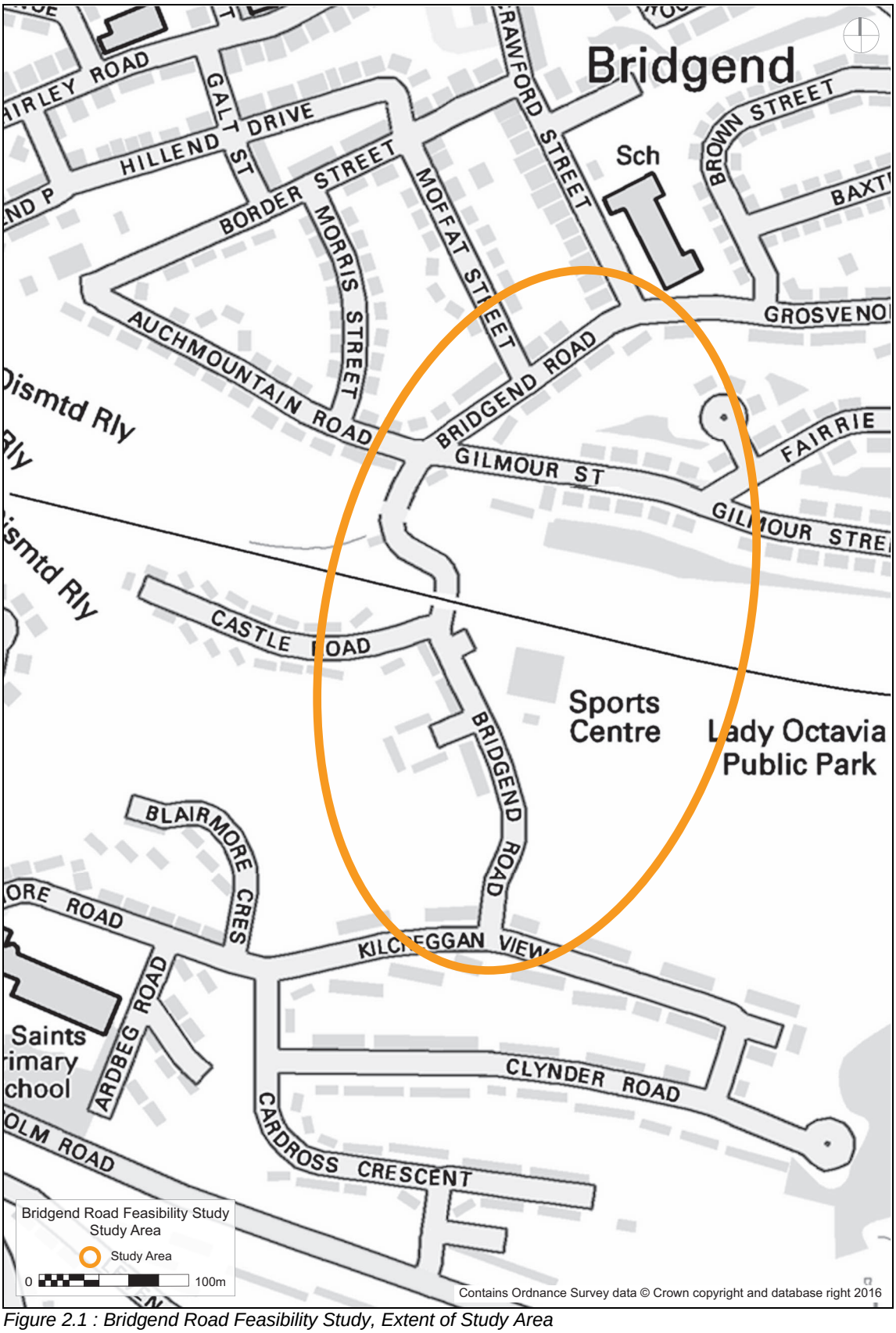


Figure 2.1 : Bridgend Road Feasibility Study, Extent of Study Area

3 ESTABLISHING AND UNDERSTANDING EXISTING CONDITIONS

3.1 Perception of Existing Conditions and Issues

IC provided a list of concerns that have been raised with elected members; these are set out as follows:

- The S-bend on Bridgend Road between the two railway bridges cause congestion, particularly at the south end
- The entrance to the Sports Centre is too close to the Traffic Calming feature
- Cars park on both sides of Bridgend Road near the Sports Centre
- Tuesdays at approximately 18:00 hours are the most congested. East End United Football Club has training sessions at this time and as one session ends, another begins, so there is an overlap with parents dropping off and picking up. Fitness classes also start and end at the same time, so there is lots of activity in and around the Sports Centre.

From various site visits and talking to locals, there was also a perception that traffic speeds could be high at certain times of the day and that there were accidents and 'near misses' on and around the S-bend.

The data collection exercise was therefore intended to understand how the road network operated at various times of the day.

3.2 Data Collection Exercise

A comprehensive data collection exercise was undertaken in order to gain an understanding of existing conditions in the study area. A series of surveys were undertaken in June and August 2016 of pedestrian activity, traffic volume and speed, and parking accumulation.

IC also provided information relating to road accidents (includes non-injury accidents) and Utilities.

IC commissioned the following surveys:

- Pedestrian counts: Monday 14 June 2016
- Automatic Traffic Counts (ATCs): Saturday 11 to Friday 17 June 2016
- Parking accumulation: Saturday 11, Thursday 16, and Friday 17 June 2016
- Classified turning counts: Tuesday 23 August 2016
- Parking accumulation: Tuesday 23 August 2016

Site visits were undertaken as follows:

- AM peak: Wednesday 22 June 2016
- PM peak: Tuesday 28 June 2016
- Evening peak: Tuesday 23 August 2016

The findings from the various surveys are set out in the remainder of this Section.

3.3 Pedestrian Counts

Pedestrian counts were undertaken on Monday 14 June 2016 from 07:00 – 22:00 hours on Bridgend Road north of its junction with Castle Road. A Location Plan is shown in Figure 3.1.

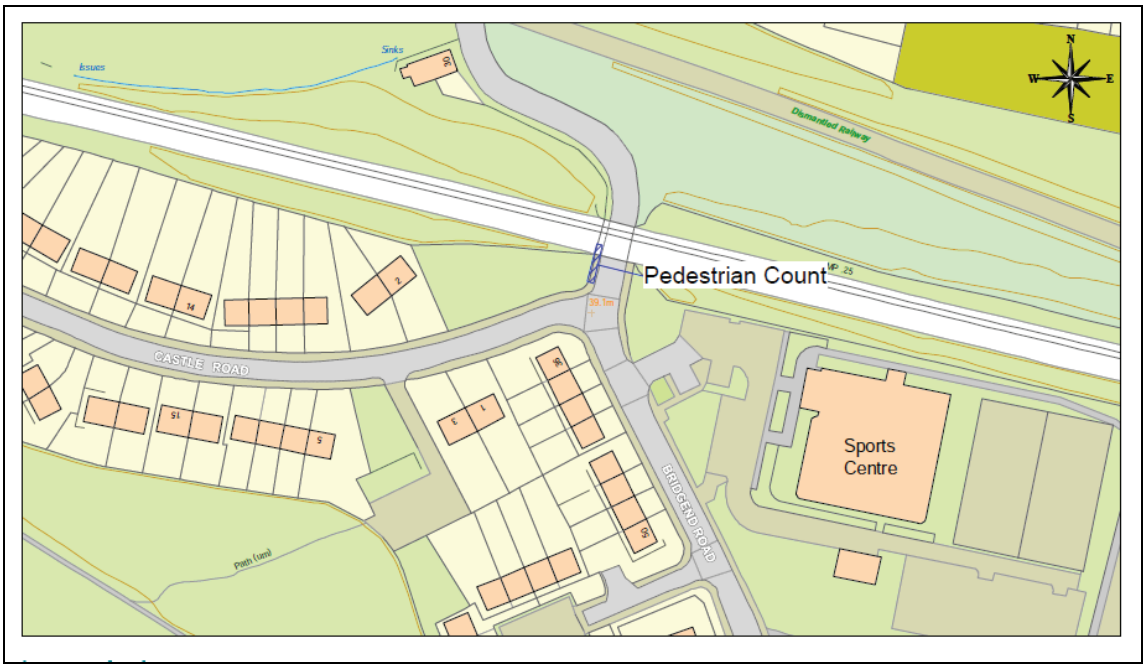


Figure 3.1 : Bridgend Road Feasibility Study, Location of Pedestrian Counts (Image courtesy of IC)

A summary of the results, by 30 minute period, are shown in Table 3.1.

Table 3.1 : Bridgend Road Feasibility Study, Results of Pedestrian Counts

	Northbound				Southbound			
Time	Adult	Children	Elderly / Disabled	Total	Adult	Children	Elderly / Disabled	Total
07:00-07:30	6	0	0	6	0	0	0	0
07:30-08:00	6	1	0	7	2	0	0	2
08:00-08:30	12	0	0	12	2	1	0	3
08:30-09:00	10	25	0	35	7	3	0	10
09:00-09:30	8	1	0	9	4	2	0	6
09:30-10:00	5	2	0	7	1	0	0	1
10:00-10:30	0	0	0	0	1	0	0	1
10:30-11:00	2	1	0	3	2	0	0	2
11:00-11:30	2	0	0	2	1	0	0	1
11:30-12:00	5	0	0	5	3	0	0	3
12:00-12:30	3	1	1	5	5	0	1	6
12:30-13:00	5	2	0	7	2	1	0	3
13:00-13:30	1	0	0	1	2	0	1	3
13:30-14:00	3	1	0	4	4	0	0	4
14:00-14:30	1	0	0	1	2	0	0	2
14:30-15:00	9	4	0	13	6	1	0	7
15:00-15:30	12	6	3	21	14	11	0	25
15:30-16:00	3	4	0	7	4	5	1	10
16:00-16:30	2	3	0	5	5	4	0	9
16:30-17:00	4	6	0	10	3	0	0	3
17:00-17:30	5	2	0	7	15	1	0	16
17:30-18:00	9	3	0	12	5	3	0	8
18:00-18:30	7	3	0	10	8	0	0	8
18:30-19:00	8	0	0	8	3	5	0	8
19:00-19:30	4	2	0	6	11	5	0	16
19:30-20:00	4	1	0	5	7	3	0	10
20:00-20:30	9	5	0	14	4	1	0	5
20:30-21:00	2	5	0	7	6	0	0	6
21:00-21:30	6	0	0	6	2	0	0	2
21:30-22:00	3	0	0	3	4	0	0	4
Total	156	78	4	238	135	46	3	184
	66%	33%	2%		73%	25%	2%	

The approximate demographic of pedestrians, in terms of age and mobility, is shown in Figure 3.2 and Figure 3.3 for the north and south bound flows respectively.

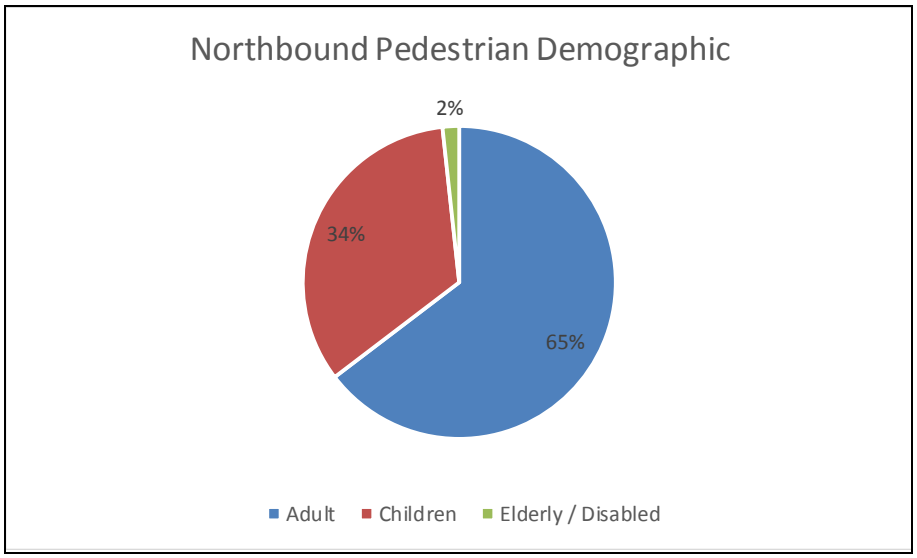


Figure 3.2 : Bridgend Road Feasibility Study, Age and Mobility of Pedestrians North Bound

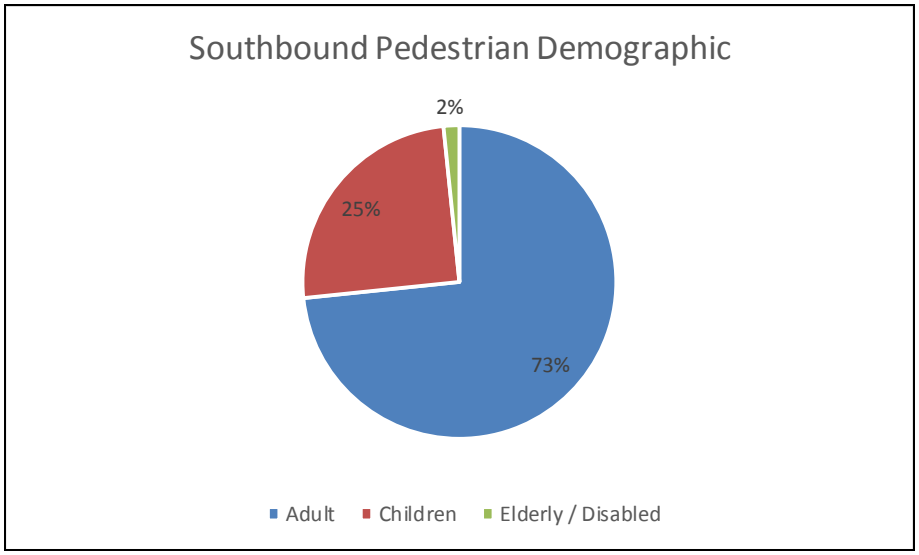


Figure 3.3 : Bridgend Road Feasibility Study, Age and Mobility of Pedestrians South Bound

Over the 12 hour period

- The total pedestrian flow was 422
- The highest pedestrian flow was in the northbound direction with 238 pedestrians; the southbound flow was 184 pedestrians
- Able bodied adults made up the majority of the two-way flow with 291 pedestrian recorded (69%):
  - Children accounted for 124 of the two-way flow total (29%)
  - Elderly/disabled accounted for 7 of the two-way flow total (2%)
- Northbound, children accounted for 33% of the total flow and 25% of the total southbound flow

- In the period 08:30 – 09:00 hours, children accounted for 62% of the total two-way flow (28) with adults making up the remaining 38% (17)
- In the period 15:00 – 15:30 hours, children accounted for 37% of the total two-way flow (17) with adults and elderly/disabled making up the remaining 63% (29)

The results show that the pedestrian activity is predominantly made up of adult movements, with the exception of the start of the school day (08:30 – 09:00 hours) when children make up 62% of the flow.

The results, by 30 minute periods, are shown graphically in Figure 3.4.

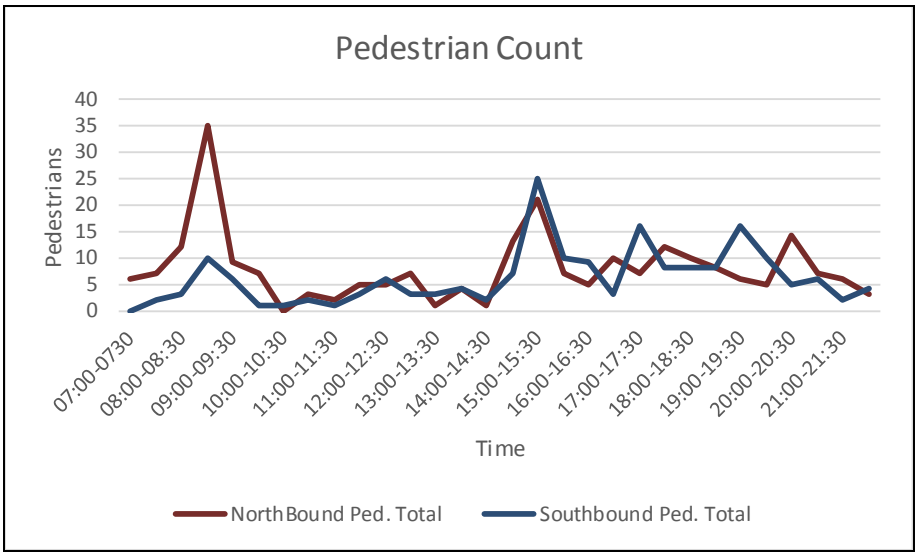


Figure 3.4 : Bridgend Road Feasibility Study, Results of Pedestrian Counts

This shows the peak activity occurs at the start and end of the school day. There is also more activity from 16:00 – 20:30 hours than there is during the day between the school peaks, when activity is low.

3.3.1 Summary of Pedestrian Counts

The volume of pedestrian activity is considered to be low in absolute terms, with short peaks in activity connected specifically to the start and end of the school day. The early evening activity could be related to usage of the sports centre, but this cannot be confirmed.

3.4 Road Accident Data

IC provided information related to Road Accidents for a three year period. The locations of the accidents are shown in the context of the study area in Figure 3.5.

As shown in Figure 3.5, there have been no road accidents recorded within the study area in the last three years.

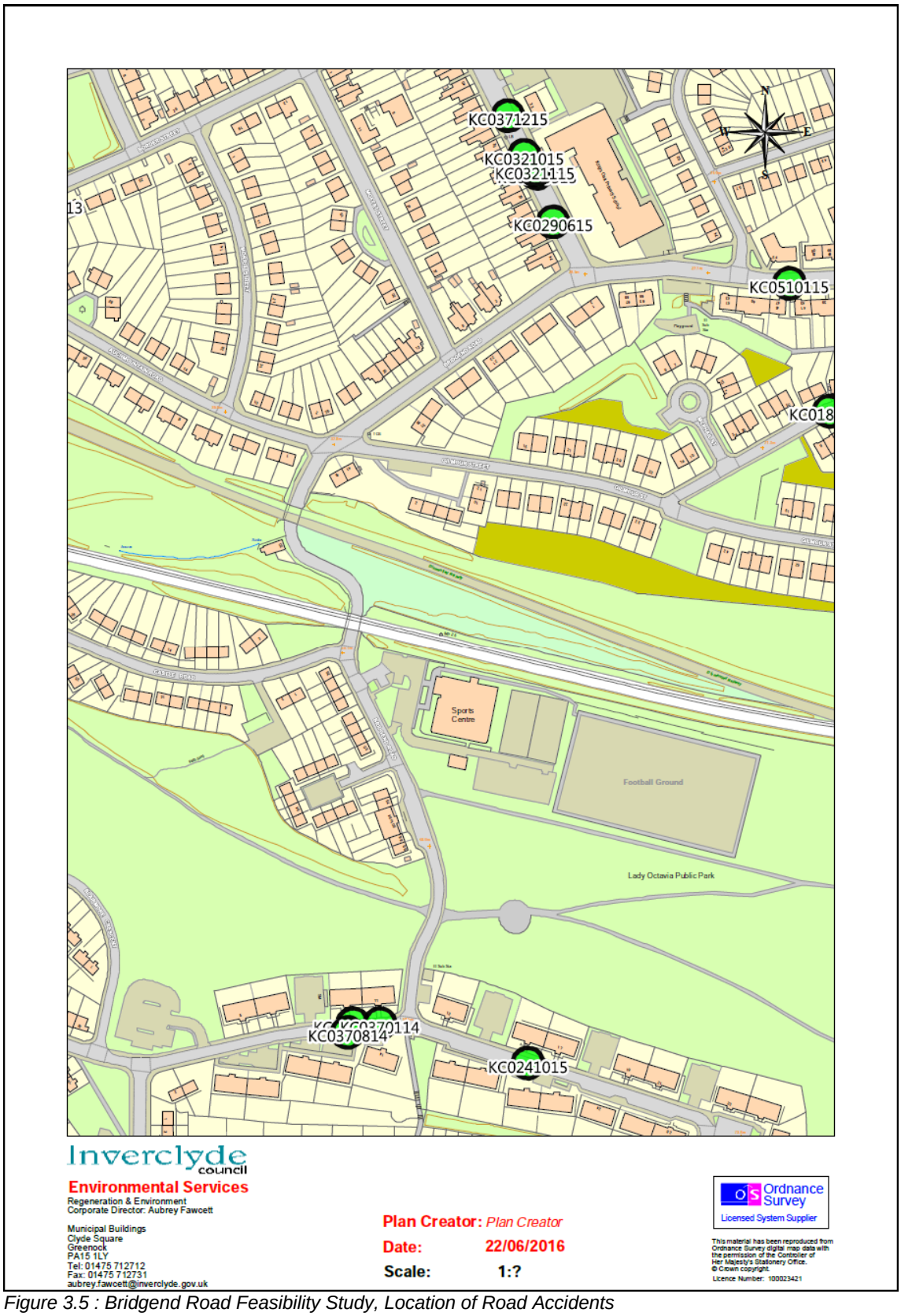


Figure 3.5 : Bridgend Road Feasibility Study, Location of Road Accidents (Image courtesy of IC)

3.5 Traffic Flow Data

ATCs were undertaken from Saturday 11 to Friday 17 June 2016 at three locations, as shown in Figure 3.6 (Sites 1, 2 and 3. Site 4 on Auchmountain Road related to a separate study).

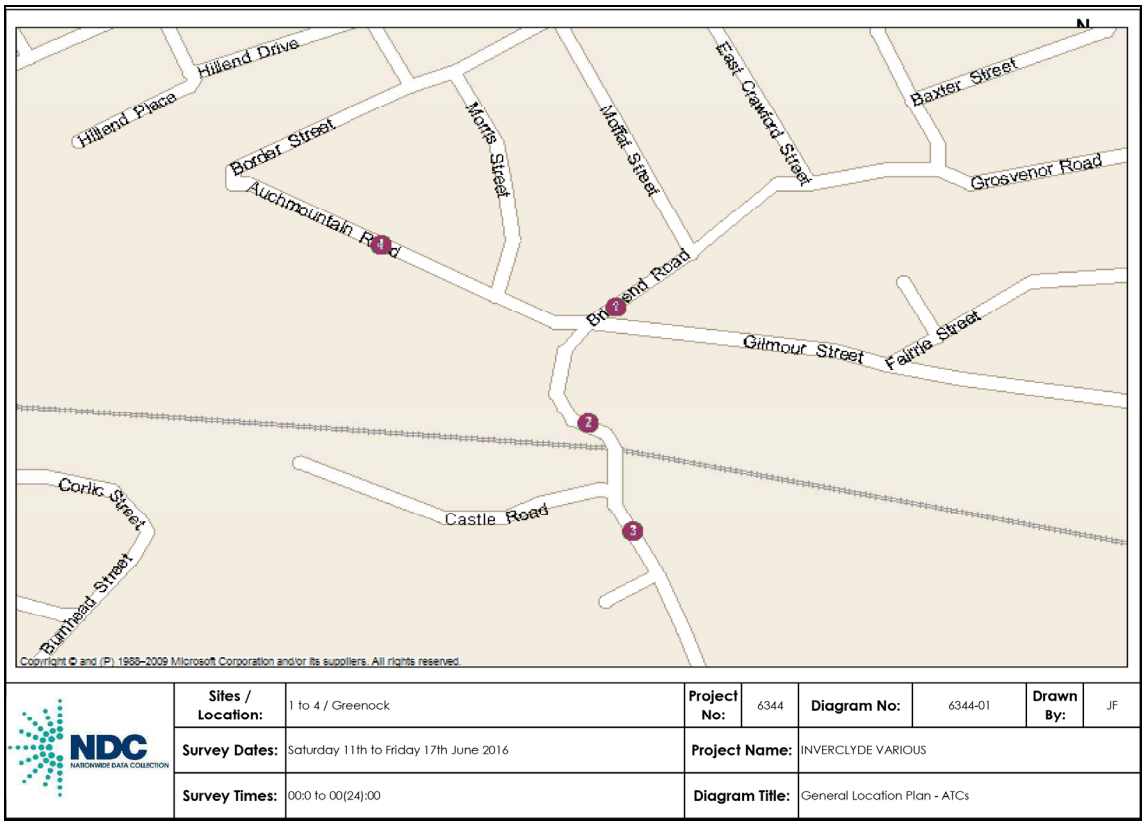


Figure 3.6 : Bridgend Road Feasibility Study, Locations of ATCs (Image courtesy of IC)

The results for the three locations are provided in the following sections.

3.5.1 Site 1: Bridgend Road North of Gilmour Street

The results for the combined two-way north and south bound flows are shown in Table 3.2.

Table 3.2 : Bridgend Road Feasibility Study,
Site 1 Traffic Flow Bridgend Road North of Gilmour Street Two-Way

Bridgend ATC Survey: Sat 11 Jun - Fri 17 Jun 2016
Bridgend Road - north of Gilmour St, Two-Way

Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	5 Day Ave	7 Day Ave
00:00	17	9	12	13	14	38	42	13	21
01:00	9	2	3	10	6	29	25	6	12
02:00	2	2	4	2	7	21	17	3	8
03:00	10	7	6	8	9	10	28	8	11
04:00	11	19	10	10	12	14	13	12	13
05:00	20	14	16	24	20	18	12	19	18
06:00	71	73	71	68	56	40	22	68	57
07:00	120	125	112	129	118	49	38	121	99
08:00	215	230	224	225	217	72	46	222	176
09:00	147	121	122	133	142	113	51	133	118
10:00	104	94	119	114	108	140	78	108	108
11:00	132	142	136	119	141	152	99	134	132
12:00	162	156	152	144	180	175	132	159	157
13:00	124	148	149	146	149	214	148	143	154
14:00	153	166	142	140	189	157	143	158	156
15:00	184	219	221	227	230	147	148	216	197
16:00	210	224	223	217	228	167	182	220	207
17:00	242	261	225	261	231	163	159	244	220
18:00	213	234	207	250	238	163	138	228	206
19:00	193	174	201	239	157	156	115	193	176
20:00	145	163	145	149	146	104	73	150	132
21:00	101	117	105	144	120	94	81	117	109
22:00	67	80	71	65	82	66	68	73	71
23:00	28	25	24	28	46	48	16	30	31
07-19	**2006**	**2120**	**2032**	**2105**	**2171**	**1712**	**1362**	**2087**	**1930**
06-22	**2516**	**2647**	**2554**	**2705**	**2650**	**2106**	**1653**	**2614**	**2404**
06-00	**2611**	**2752**	**2649**	**2798**	**2778**	**2220**	**1737**	**2718**	**2506**
00-00	**2680**	**2805**	**2700**	**2865**	**2846**	**2350**	**1874**	**2779**	**2589**

The results of the five day average flows show a pattern with peaks in flow between 08:00 – 09:00 hours and 15:00 – 19:00 hours.

The results of the five day and seven day average flows show that flows are relatively low across the week. The highest single hour two-way flow was 261 vehicles on the Thursday from 17:00 – 18:00 hours.

The results for the weekday flows are shown graphically in Figure 3.7.

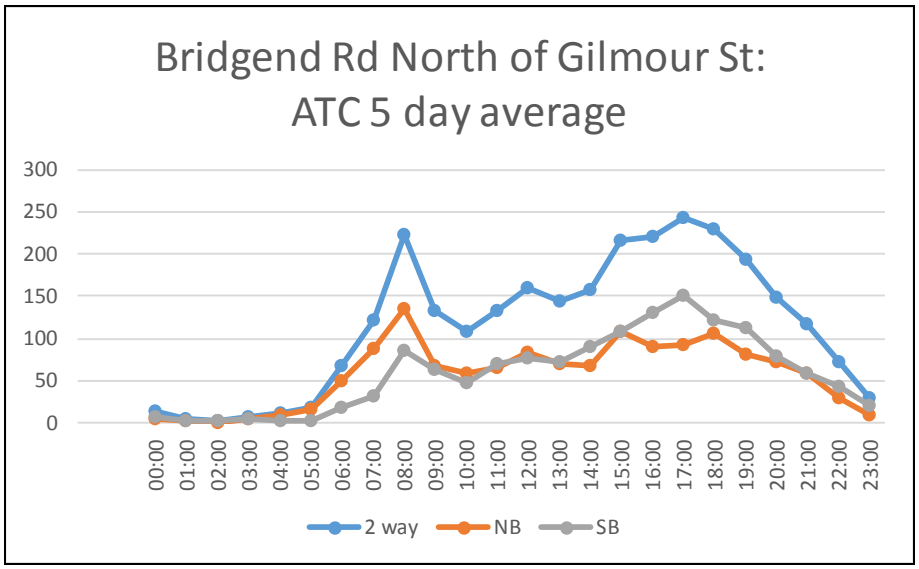


Figure 3.7 : Bridgend Road Feasibility Study
Site 1 Traffic Flow Bridgend Road North of Gilmour Street five day Average Flows Two-Way

Figure 3.7 clearly shows the patterns throughout the day, with a peak occurring in the AM from 08:00 – 09:00 hours. The highest two-way average flow occurs from 17:00 – 18:00 hours, with an average two-way flow greater than 200 vehicles/hour from 15:00 – 19:00 hours.

The flows appear to be tidal in the peaks, with northbound predominant in the morning and southbound in the evening. This is likely to reflect commuting trips.

3.5.2 Site 2: Bridgend Road North of Castle Road

The results for the combined two-way north and south bound flows are shown in Table 3.3.

Table 3.3 : Bridgend Road Feasibility Study
Site 2 Traffic Flow Bridgend Road North of Castle Road Two-Way

Bridgend ATC Survey: Sat 11 Jun - Fri 17 Jun 2016
Bridgend Road - north of Castle Road, Two-Way

Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	5 Day Ave	7 Day Ave
00:00	15	7	11	16	16	31	36	13	19
01:00	9	3	6	5	6	31	32	6	13
02:00	2	2	2	1	9	21	13	3	7
03:00	11	5	6	6	8	9	28	7	10
04:00	12	17	7	10	10	11	13	11	11
05:00	16	10	15	22	16	12	12	16	15
06:00	59	57	57	55	47	32	20	55	47
07:00	114	126	118	133	121	47	39	122	100
08:00	263	267	259	262	250	76	41	260	203
09:00	145	117	141	141	147	107	43	138	120
10:00	104	89	117	105	119	129	72	107	105
11:00	135	134	122	100	135	147	102	125	125
12:00	161	147	139	137	157	169	129	148	148
13:00	122	151	146	152	150	197	158	144	154
14:00	159	169	147	162	200	166	150	167	165
15:00	240	269	268	250	283	153	140	262	229
16:00	215	249	224	236	217	147	170	228	208
17:00	260	243	233	272	236	166	165	249	225
18:00	238	226	230	258	245	152	149	239	214
19:00	191	189	200	247	169	151	120	199	181
20:00	147	168	144	149	143	103	83	150	134
21:00	101	120	101	134	116	83	79	114	105
22:00	61	79	71	61	76	60	62	70	67
23:00	25	28	20	23	51	42	19	29	30
07-19	**2156**	**2187**	**2144**	**2208**	**2260**	**1656**	**1358**	**2191**	**1996**
06-22	**2654**	**2721**	**2646**	**2793**	**2735**	**2025**	**1660**	**2710**	**2462**
06-00	**2740**	**2828**	**2737**	**2877**	**2862**	**2127**	**1741**	**2809**	**2559**
00-00	**2805**	**2872**	**2784**	**2937**	**2927**	**2242**	**1875**	**2865**	**2635**

The results of the five day average flows show a pattern with peaks in flow between 08:00 – 09:00 hours and 15:00 – 19:00 hours.

The results of the five day and seven day average flows show that flows are relatively low across the week. The highest single hour two-way flow was 283 vehicles on the Friday from 15:00 – 16:00 hours.

The results for the weekday flows are shown graphically in Figure 3.8.

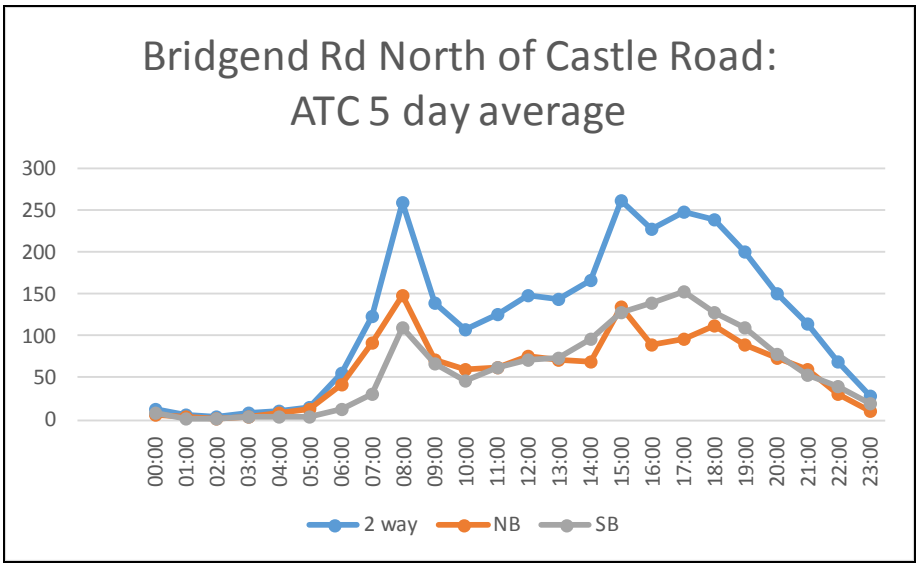


Figure 3.8 : Bridgend Road Feasibility Study
Site 2 Traffic Flow Bridgend Road north of Castle Road five day Average Flows Two-Way

Figure 3.8 clearly shows the patterns throughout the day, with a peak occurring in the AM from 08:00 – 09:00 hours. The highest two-way average flow occurs from 15:00 – 16:00 hours, with an average two-way flow greater than 200 vehicles/hour from 15:00 – 19:00 hours.

The flows appear to be tidal in the peaks, with northbound predominant in the morning and southbound in the evening. This is likely to reflect commuting.

3.5.3 Site 3: Bridgend Road South of Castle Road

The results for the combined two-way north and south bound flows are shown in Table 3.4.

Table 3.4 : Bridgend Road Feasibility Study, Traffic Flow Bridgend Road South of Castle Road Two-Way

Bridgend ATC Survey: Sat 11 Jun - Fri 17 Jun 2016
Bridgend Road - south of Castle Road, Two-Way

Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	5 Day Ave	7 Day Ave
00:00	15	6	11	16	18	27	35	13	18
01:00	9	3	6	5	5	31	32	6	13
02:00	2	3	2	1	7	21	13	3	7
03:00	11	5	6	6	9	9	27	7	10
04:00	9	14	4	8	8	11	12	9	9
05:00	17	9	15	20	14	12	9	15	14
06:00	54	44	51	47	40	30	17	47	40
07:00	102	116	108	119	109	48	35	111	91
08:00	260	256	264	254	247	67	34	256	197
09:00	127	106	127	132	133	86	39	125	107
10:00	99	83	96	95	109	107	68	96	94
11:00	129	127	121	90	126	107	97	119	114
12:00	152	138	129	127	132	140	123	136	134
13:00	111	143	126	141	144	161	141	133	138
14:00	151	151	141	152	186	129	132	156	149
15:00	230	251	253	228	262	123	121	245	210
16:00	202	231	202	207	184	133	160	205	188
17:00	199	198	189	220	196	149	145	200	185
18:00	174	186	191	183	225	134	129	192	175
19:00	122	145	154	166	141	141	103	146	139
20:00	105	113	112	112	118	103	69	112	105
21:00	86	96	77	89	96	75	69	89	84
22:00	45	59	61	53	74	52	61	58	58
23:00	25	27	19	20	45	38	18	27	27
07-19	**1936**	**1986**	**1947**	**1948**	**2053**	**1384**	**1224**	**1974**	**1783**
06-22	**2303**	**2384**	**2341**	**2362**	**2448**	**1733**	**1482**	**2368**	**2150**
06-00	**2373**	**2470**	**2421**	**2435**	**2567**	**1823**	**1561**	**2453**	**2236**
00-00	**2436**	**2510**	**2465**	**2491**	**2628**	**1934**	**1689**	**2506**	**2308**

The results of the five day average flows show a pattern with peaks in flow between 08:00 – 09:00 hours and 15:00 – 19:00 hours.

The results of the five day and seven day average flows show that flows are relatively low across the week. The highest single hour two-way flow was 264 vehicles on the Wednesday from 08:00 – 09:00 hours.

The results for the weekday flows are shown graphically in Figure 3.9.

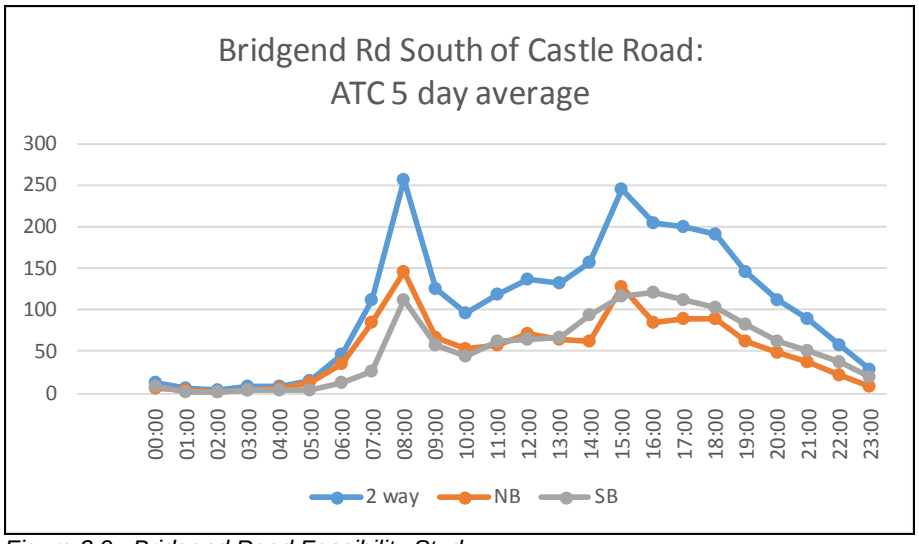


Figure 3.9 : Bridgend Road Feasibility Study
Traffic Flow Bridgend Road South of Castle Road five day Average Flows Two-Way

Figure 3.9 shows the patterns throughout the day, with peaks occurring from 08:00 – 09:00 hours and again from 15:00 – 16:00 hours.

The flows at this location do not appear to be particularly tidal in the peaks; the northbound appears to be the predominant flow in the peaks, but only marginally.

3.5.4 Summary of Traffic Flow

Across the three sites, the traffic flows generally have distinct peaks in the AM and PM periods. The PM peak is more prolonged than the AM peak.

The traffic flows, at less than 300 vehicles per hour in the peak, are considered to be relatively low.

3.6 Traffic Speed Data

ATCs were undertaken from Saturday 11 to Friday 17 June 2016 at three locations, as shown previously in Figure 3.6. The ATCs also provide outputs for mean and average speeds at each of the locations.

The results for the three locations are provided in the following sections.

3.6.1 Site 1: Bridgend Road North of Gilmour Street

The results for the combined north and south bound mean and 85th percentile speeds are shown in Table 3.5.

Table 3.5 : Bridgend Road Feasibility Study
Site 1 Traffic Speeds Bridgend Road North of Gilmour Street Two-Way

Bridgend Speed Survey: Sat 11 Jun - Fri 17 Jun 2016
Bridgend Road - north of Gilmour St, Two-Way

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	5 Day Ave	7 Day Ave
Mean Speed	21.8	21.4	21.6	21.8	21.6	21.4	21.9	21.6	21.6
85%ile	26.8	26.2	26.4	26.6	26.6	26.6	26.6	26.5	26.6

The maximum combined mean speed does not exceed 22mph while the equivalent 85th percentile speed does not exceed 27mph.

These data suggest that traffic generally travels below the 30mph speed limit on that section of the road.

3.6.2 Site 2: Bridgend Road North of Castle Road

The results for the combined north and south bound mean and 85th percentile speeds are shown in Table 3.6.

Table 3.6 : Bridgend Road Feasibility Study
Traffic Speeds Bridgend Road North of Castle Road Two-Way

Bridgend Speed Survey: Sat 11 Jun - Fri 17 Jun 2016
Bridgend Road - north of Castle Road, Two-Way

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	5 Day Ave	7 Day Ave
Mean Speed	18.5	18.5	18.4	18.6	18.7	18.6	18.7	18.5	18.6
85%ile	20.8	20.6	20.4	20.6	20.8	20.6	20.6	20.6	20.6

The maximum combined mean speed does not exceed 19mph, while the equivalent 85th percentile speed does not exceed 21mph. These low speeds are the result of the S-bends and the traffic calming measures in close proximity of the site.

These data suggest that traffic generally travels below the 30mph speed limit on that section of the road.

3.6.3 Site 3: Bridgend Road South of Castle Road

The results for the combined north and south bound mean and 85th percentile speeds are shown in Table 3.7.

Table 3.7 : Bridgend Road Feasibility Study
Traffic Speeds Bridgend Road South of Castle Road Two-Way

Bridgend Speed Survey: Sat 11 Jun - Fri 17 Jun 2016
Bridgend Road - south of Castle Road, Two-Way

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	5 Day Ave	7 Day Ave
Mean Speed	20.1	19.8	19.7	19.5	20.2	20.2	20.5	19.9	20.0
85%ile	23.7	23.7	23.5	23.5	23.9	23.9	23.9	23.7	23.7

The maximum combined mean speed does not exceed 21mph, while the equivalent 85th percentile speed does not exceed 24mph.

These data suggest that traffic generally travels below the 30mph speed limit on that section of the road.

3.6.4 Summary of Traffic Speed Data

The data shown in Table 3.5 to Table 3.7 is summarised as follows:

- Site 1 mean speed < 22mph, 85th percentile speed < 27mph
- Site 2 mean speed < 19mph, 85th percentile speed < 21mph
- Site 3 mean speed < 21mph, 85th percentile speed < 24mph

These data show that traffic speeds generally do not exceed the 30mph speed limit of the road. The speeds are lowest at Site 2, between the two bridges, which suggests the S-bends and build outs reduce traffic speeds and act as a traffic calming measure.

Traffic speeds are also considered to be low at Site 3, south of Castle Road; this could be due to the presence of on-street parking which acts as a traffic calming measure.

The highest speeds are at Site 1, north of Gilmour Street, where the road is relatively wide and straight in comparison to Site 2 and Site 3. Even at this location, the speeds are considered to be relatively low.

3.7 Parking Data: Occupancy

3.7.1 Background

The areas covered in the parking study are shown in Figure 3.10.

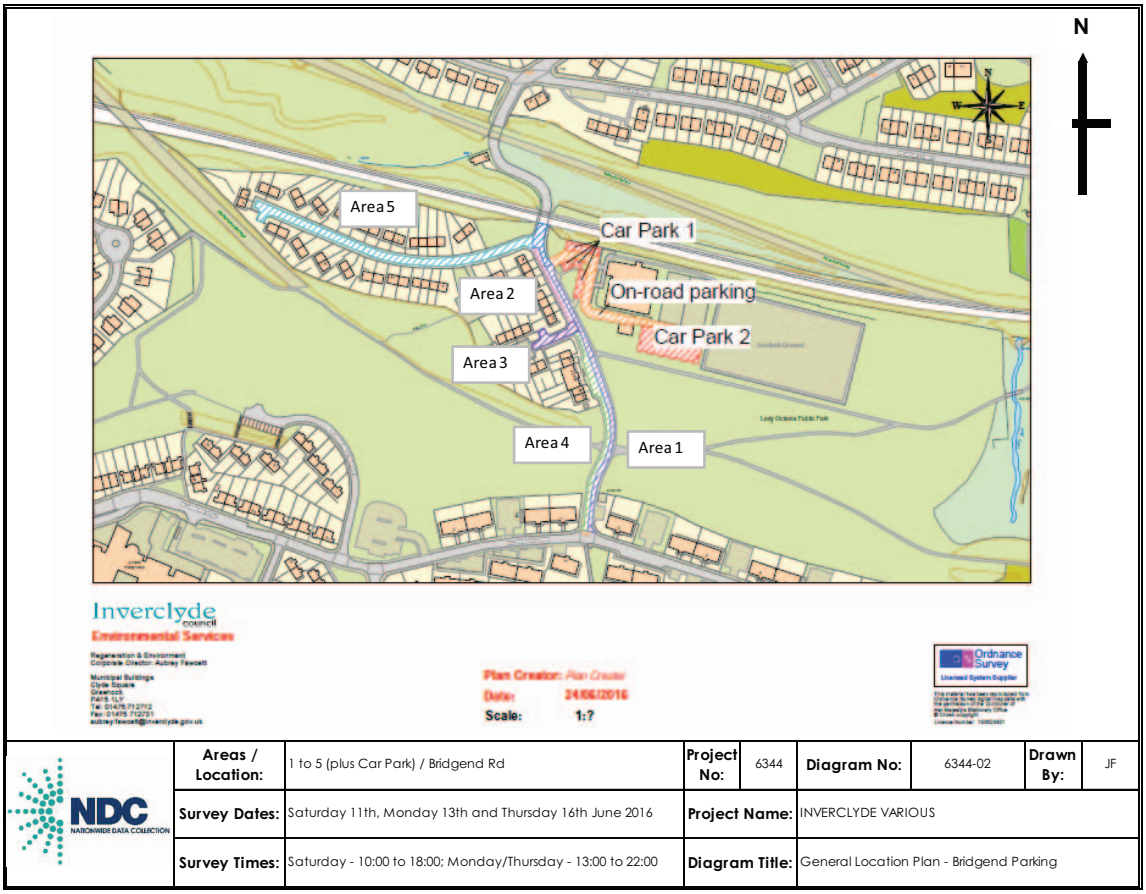


Figure 3.10 : Bridgend Road Feasibility Study, Parking Study Area
(Image Courtesy of IC)

The approximate number of parking spaces in each of the designated areas is given in Table 3.8. The only parking area with marked out bays is Car Park 1, to the front of the Sports Centre, where there are 20 marked bays available.

There are no Traffic Regulation Orders in place at any of the areas included in the study. For the purposes of this report, the term 'illegally' has been used to identify parking that takes place in locations that are considered to be inappropriate; it is acknowledged that the parking is not taking place illegally.

The remaining number of spaces has been estimated based on one of the following methods:

- The length of the kerbside (m) available for parking, divided by 5.5m.
- For Car Park 2, the number of bays occupied when the car park was full.
- Area 1 and On Road Parking are not available for parking, but cars do park there 'illegally' during busy periods. The number of spaces available is based on the number of cars observed parking at peak times.
  (NB The term 'On Road' is used throughout this report to identify cars that park on the Sports Centre's internal road, and should not be confused with on-street parking which relates to car parked on a public road).

Table 3.8 : Bridgend Road Feasibility Study, Estimated Number of Available Parking Spaces

Bridgend Parking Bay Summary								
Bay Type	Area 1*	Area 2	Area 3	Area 4	Area 5	Car Park 1	Car Park 2	Car Park On Road Parking*
Unrestricted	18	7	10	17	19	0	0	11
Allocated Bays	0	0	2	0	0	20	0	0
Corner	0	1	1	2	2	0	0	0
Dropped Kerb	0	1	0	2	7	0	0	0
Access	0	0	0	0	0	0	0	0
Disabled	0	0	0	0	1	0	0	0
Marked Bay	0	0	0	6	0	0	0	0
Keep Clear	0	0	0	0	1	0	0	0
Unallocated Bays	0	0	0	0	0	0	26	0
Total	**18**	**9**	**13**	**27**	**30**	**20**	**26**	**11**

* denotes areas where 'illegal' parking takes place

It is estimated that there are 18 + 11 = 29 spaces where parking takes place 'illegally', i.e. on the footway and grass verge to the east of Bridgend Road and on the Sports Centre's internal road, where this type of parking causes congestion and/or prohibits two-way movement.

The estimated car park capacity of the Sports Centre is 20 + 26 = 46 spaces, although as Car Park 2 at the rear of the Centre is not formally marked out, the estimate of 26 could vary up or down.

Areas 2, 3, 4, and 5 represent on-street parking on Bridgend Road (including its cul-de-sac) and Castle Road.

An initial survey exercise was undertaken in June 2016, but this coincided with the Euro 2016 football tournament which the Sports Centre management advised had affected the numbers participating in some activities.

In addition, the domestic football season had finished therefore East End United Football Club, who use the facility, were not training due to the close season.

For these reasons, a second survey exercise was undertaken in August 2016 when the football season had restarted, so would include an East End United Football Club session.

3.7.2 Results of Car Parking Survey June 2016

The percentage occupancy of parking spaces by day is shown in Table 3.9, Table 3.10, and Table 3.11 for the Saturday, Monday, and Thursday respectively.

Table 3.9 : Percentage Occupancy of Spaces by Area Saturday 11 June 2016

Bridgend Occupancy Summary (%) Saturday 11 June 2016								
Time	Area 1	Area 2	Area 3	Area 4	Area 5	Car Park 1	Car Park 2	Car Park On Road Parking
10:00 - 10:15	17%	22%	54%	15%	80%	45%	23%	0%
10:15 - 10:30	17%	22%	62%	15%	80%	60%	23%	0%
10:30 - 10:45	17%	33%	62%	15%	77%	95%	27%	0%
10:45 - 11:00	17%	33%	38%	15%	73%	95%	27%	0%
11:00 - 11:15	17%	22%	46%	15%	77%	90%	31%	0%
11:15 - 11:30	17%	22%	38%	15%	80%	95%	8%	0%
11:30 - 11:45	17%	22%	38%	15%	73%	95%	8%	0%
11:45 - 12:00	17%	33%	38%	11%	77%	50%	4%	0%
12:00 - 12:15	17%	22%	38%	7%	67%	60%	4%	0%
12:15 - 12:30	17%	22%	38%	7%	63%	100%	4%	0%
12:30 - 12:45	17%	22%	38%	11%	57%	100%	4%	0%
12:45 - 13:00	22%	44%	46%	11%	53%	100%	4%	0%
13:00 - 13:15	22%	33%	46%	11%	57%	100%	4%	9%
13:15 - 13:30	22%	44%	54%	11%	60%	95%	0%	9%
13:30 - 13:45	17%	33%	46%	15%	60%	95%	4%	18%
13:45 - 14:00	17%	44%	54%	11%	67%	55%	4%	9%
14:00 - 14:15	17%	33%	54%	7%	60%	65%	4%	9%
14:15 - 14:30	22%	33%	46%	7%	57%	95%	8%	9%
14:30 - 14:45	22%	56%	54%	7%	57%	90%	8%	0%
14:45 - 15:00	22%	44%	54%	7%	57%	95%	12%	9%
15:00 - 15:15	22%	33%	54%	7%	63%	105%	15%	9%
15:15 - 15:30	22%	33%	54%	7%	73%	95%	15%	9%
15:30 - 15:45	22%	44%	54%	7%	67%	85%	15%	9%
15:45 - 16:00	22%	33%	54%	7%	67%	25%	8%	0%
16:00 - 16:15	22%	33%	54%	7%	63%	10%	8%	0%
16:15 - 16:30	22%	33%	54%	7%	73%	0%	8%	0%
16:30 - 16:45	22%	33%	54%	7%	83%	0%	8%	0%
16:45 - 17:00	22%	33%	54%	7%	77%	0%	4%	0%
17:00 - 17:15	22%	33%	54%	7%	80%	0%	0%	0%
17:15 - 17:30	28%	44%	69%	15%	83%	0%	0%	0%
17:30 - 17:45	28%	22%	62%	19%	83%	0%	0%	0%
17:45 - 18:00	0%	33%	62%	15%	87%	0%	0%	0%

The results from Table 3.9 shows that on-street parking takes place throughout the day as might be expected in a residential area, with Areas 2, 3 and 5 having a relatively high occupancy throughout the day.

'Illegal' parking takes place in Area 1 throughout the day, and on occasions On Road within the Sports Centre. Car Park 1 at the front of the Sports Centre is the most heavily utilized, with 100% occupancy between 12:15 – 13:15 hours and again from 15:00 – 15:15 hours, while Car Park 2 at the rear has spare capacity throughout the day.

The peak parking demand across the entire area (including on-street parking and parking within the Sports Centre) was estimated at 67 cars between 10:30 – 10:45 hours.

Table 3.10 : Percentage Occupancy of Spaces by Area Monday 13 June 2016

Bridgend Occupancy Summary (%) Monday 13 June 2016								
Time	Area 1	Area 2	Area 3	Area 4	Area 5	Car Park 1	Car Park 2	Car Park On Road Parking
13:00 - 13:15	11%	0%	38%	11%	47%	10%	0%	0%
13:15 - 13:30	11%	0%	38%	7%	47%	10%	0%	0%
13:30 - 13:45	11%	0%	46%	11%	53%	10%	0%	0%
13:45 - 14:00	11%	0%	38%	11%	53%	10%	8%	0%
14:00 - 14:15	11%	0%	38%	11%	53%	15%	8%	0%
14:15 - 14:30	17%	11%	31%	11%	53%	15%	12%	0%
14:30 - 14:45	22%	11%	31%	15%	53%	15%	15%	0%
14:45 - 15:00	17%	0%	23%	11%	47%	20%	8%	0%
15:00 - 15:15	17%	0%	23%	11%	37%	25%	8%	0%
15:15 - 15:30	17%	0%	23%	11%	33%	25%	8%	0%
15:30 - 15:45	17%	11%	23%	15%	43%	30%	12%	0%
15:45 - 16:00	17%	11%	23%	11%	43%	25%	12%	0%
16:00 - 16:15	17%	22%	23%	11%	47%	30%	0%	0%
16:15 - 16:30	17%	22%	38%	11%	47%	25%	0%	0%
16:30 - 16:45	17%	22%	46%	11%	50%	30%	0%	0%
16:45 - 17:00	17%	22%	54%	15%	53%	25%	0%	0%
17:00 - 17:15	17%	11%	54%	19%	53%	35%	4%	0%
17:15 - 17:30	17%	0%	54%	19%	60%	65%	0%	0%
17:30 - 17:45	17%	11%	46%	19%	60%	95%	8%	0%
17:45 - 18:00	17%	33%	46%	19%	67%	100%	65%	36%
18:00 - 18:15	22%	56%	54%	19%	77%	95%	112%	82%
18:15 - 18:30	33%	67%	62%	19%	77%	100%	115%	91%
18:30 - 18:45	39%	67%	62%	19%	77%	95%	115%	100%
18:45 - 19:00	50%	56%	62%	26%	77%	100%	96%	100%
19:00 - 19:15	39%	22%	62%	30%	83%	75%	58%	109%
19:15 - 19:30	44%	0%	62%	30%	87%	70%	50%	91%
19:30 - 19:45	44%	0%	62%	33%	93%	80%	54%	91%
19:45 - 20:00	39%	22%	62%	33%	93%	95%	42%	64%
20:00 - 20:15	33%	33%	62%	33%	90%	95%	42%	109%
20:15 - 20:30	28%	44%	62%	33%	83%	75%	42%	100%
20:30 - 20:45	28%	44%	69%	33%	83%	65%	42%	100%
20:45 - 21:00	28%	44%	69%	26%	83%	65%	46%	91%
21:00 - 21:15	28%	11%	62%	30%	87%	55%	31%	55%
21:15 - 21:30	28%	11%	62%	19%	87%	45%	31%	0%
21:30 - 21:45	28%	22%	62%	19%	90%	45%	31%	0%
21:45 - 22:00	28%	22%	62%	19%	90%	45%	35%	0%

The results from Table 3.10 show that on-street parking takes place throughout the day in Areas 3 and 5. In contrast to the Saturday, the occupancy in Area 2 fluctuates during the day between 0% and 67%.

'Illegal' parking takes place in Area 1 throughout the day to a greater extent than the Saturday. This is also true for the Sports Centre's internal road, with On Road Parking taking place from 17:45 – 21:15 hours, with an occupancy of 100% or more for prolonged periods.

Car Parks 1 and 2 were also at 100% capacity or more at times between 17:45 – 19:00 hours. On-street usage in Areas 1, 2 and 4 also tends to reflect the usage of the Sports Centre's car park in terms of how demand changes throughout the day, particularly in the early evening.

The peak parking demand across the entire area (including on-street parking and parking within the Sports Centre) was estimated at 109 cars between 18:30 – 18:45 hours.

Table 3.11 : Percentage Occupancy of Spaces by Area Thursday 16 June 2016

Bridgend Occupancy Summary (%) Thursday 16 June 2016								
Time	Area 1	Area 2	Area 3	Area 4	Area 5	Car Park 1	Car Park 2	Car Park On Road Parking
13:00 - 13:15	17%	11%	31%	15%	23%	10%	0%	0%
13:15 - 13:30	17%	11%	31%	11%	27%	10%	0%	0%
13:30 - 13:45	17%	11%	31%	11%	37%	10%	0%	0%
13:45 - 14:00	17%	11%	31%	11%	37%	10%	0%	0%
14:00 - 14:15	17%	11%	31%	11%	33%	10%	0%	0%
14:15 - 14:30	17%	11%	31%	11%	30%	5%	0%	0%
14:30 - 14:45	17%	11%	31%	15%	30%	5%	0%	0%
14:45 - 15:00	11%	11%	38%	11%	37%	10%	0%	0%
15:00 - 15:15	17%	11%	38%	4%	40%	10%	0%	0%
15:15 - 15:30	17%	22%	38%	0%	37%	15%	0%	0%
15:30 - 15:45	22%	33%	38%	4%	43%	20%	0%	0%
15:45 - 16:00	17%	33%	31%	4%	57%	20%	0%	0%
16:00 - 16:15	17%	22%	38%	7%	60%	20%	0%	0%
16:15 - 16:30	17%	22%	38%	7%	50%	25%	0%	0%
16:30 - 16:45	17%	11%	38%	7%	57%	35%	19%	18%
16:45 - 17:00	17%	0%	38%	11%	57%	40%	65%	9%
17:00 - 17:15	17%	0%	46%	15%	67%	85%	73%	9%
17:15 - 17:30	22%	22%	38%	15%	70%	95%	46%	9%
17:30 - 17:45	39%	22%	38%	15%	80%	85%	85%	9%
17:45 - 18:00	39%	22%	38%	15%	83%	90%	96%	18%
18:00 - 18:15	72%	56%	38%	26%	83%	75%	58%	45%
18:15 - 18:30	22%	44%	46%	15%	87%	75%	42%	55%
18:30 - 18:45	22%	44%	54%	19%	83%	75%	42%	55%
18:45 - 19:00	17%	44%	38%	19%	83%	90%	108%	64%
19:00 - 19:15	22%	56%	38%	22%	87%	90%	108%	73%
19:15 - 19:30	22%	44%	46%	22%	90%	70%	100%	45%
19:30 - 19:45	33%	33%	46%	22%	97%	70%	104%	55%
19:45 - 20:00	22%	33%	46%	30%	97%	95%	100%	73%
20:00 - 20:15	22%	44%	46%	26%	100%	90%	85%	64%
20:15 - 20:30	17%	33%	46%	22%	97%	90%	85%	55%
20:30 - 20:45	17%	33%	46%	26%	107%	80%	69%	36%
20:45 - 21:00	22%	33%	54%	26%	110%	85%	81%	36%
21:00 - 21:15	22%	44%	46%	26%	107%	90%	81%	27%
21:15 - 21:30	22%	22%	54%	22%	103%	20%	8%	0%
21:30 - 21:45	28%	33%	54%	22%	107%	20%	4%	0%
21:45 - 22:00	28%	33%	54%	22%	100%	20%	4%	0%

The results from Table 3.11 are similar to those for the Monday (Table 3.10), with on-street parking taking place throughout the day in Areas 3 and 5. Area 5 (Castle Road) is shown to have an occupancy of approximately 100% or more from 19:30 hours through to 22:00 hours when the survey ended. The occupancy in Area 2 fluctuates during the day between 0% and 56%.

'Illegal' parking takes place in Area 1 throughout the day to a greater extent than the Saturday, but similar to the Monday. This is also true for the Sports Centre's internal road, with On Road Parking taking place from 16:30 - 21:15 hours.

Car Park 1 was occupied throughout, with a maximum capacity of 95%, while Car Park 2 was not used until 16:30 hours, but had an occupancy of 100% or more from 18:45 – 20:00 hours.

The peak parking demand across the entire area (including on-street parking and parking within the Sports Centre) was estimated at 103 cars between 19:45 – 20:00 hours.

3.7.3 Summary of Results from June 2016 Survey

The car parking results are summarised as follows:

- On-street parking takes place throughout the day in Areas 3 and 5.
- The demand for on-street parking in Area 2 fluctuates day by day, and by time of day.
- There is strong evidence of 'illegal' parking in Area 1 on a day-by-day basis.
- Car Park 1 (the Sports Centre's front car park) regularly has an occupancy of greater than 90% during peak periods, and often 100% or more which indicates cars are parked outwith designated parking bays, e.g. on the grassed area or footpaths.
- The occupancy of Car Park 2 (the Sports Centre's rear car park) fluctuates during the day and on a daily basis. On each of the days, there were times when no cars were observed parking while, in each of the weekdays, its occupancy was greater than 100% at times.
- The peak occupancy at the Sports Centre was:
  - Saturday 10:30 – 15:45 hours Car Park 1 generally > 90% occupancy
  - Monday 17:30 – 21:00 hours with Car Park 1 & 2, On Road internal and Areas 1 and 2 experiencing their highest occupancy during these periods, at times in excess of 100%.
  - Thursday 17:00 – 21:15 hours, with a similar pattern to the Thursday, but with generally lower occupancy levels over a shorter duration.
- The greatest parking demand was estimated at 109 cars between 18:30 – 18:45 hours on the Monday.

3.7.4 Results from August 2016 Survey

Further surveys were undertaken on Tuesday 23 August 2016. The results are shown in Table 3.12.

Table 3.12 : Percentage Occupancy of Spaces by Area Tuesday 23 August 2016

Bridgend Occupancy Summary (%)
Tuesday 23 August 2016

Time	Area 1	Area 2	Area 3	Area 4	Area 5	Car Park 1	Car Park 2	On Road Parking
13:00 - 13:15	22%	33%	23%	15%	37%	10%	4%	0%
13:15 - 13:30	17%	33%	31%	12%	50%	20%	4%	0%
13:30 - 13:45	6%	22%	31%	15%	50%	35%	4%	0%
13:45 - 14:00	6%	22%	31%	12%	47%	35%	4%	0%
14:00 - 14:15	6%	11%	38%	19%	40%	15%	0%	0%
14:15 - 14:30	6%	11%	38%	19%	30%	40%	4%	0%
14:30 - 14:45	6%	22%	38%	15%	40%	15%	8%	0%
14:45 - 15:00	6%	33%	38%	15%	40%	15%	8%	0%
15:00 - 15:15	6%	33%	38%	12%	27%	15%	8%	0%
15:15 - 15:30	6%	33%	38%	12%	43%	15%	8%	18%
15:30 - 15:45	6%	33%	38%	12%	53%	25%	4%	18%
15:45 - 16:00	6%	33%	38%	12%	57%	30%	4%	18%
16:00 - 16:15	6%	33%	31%	19%	70%	30%	12%	18%
16:15 - 16:30	11%	33%	31%	15%	47%	55%	35%	18%
16:30 - 16:45	11%	33%	31%	15%	53%	70%	100%	18%
16:45 - 17:00	11%	44%	38%	23%	57%	100%	123%	18%
17:00 - 17:15	11%	67%	38%	23%	53%	100%	100%	45%
17:15 - 17:30	17%	100%	38%	23%	73%	100%	100%	73%
17:30 - 17:45	39%	100%	38%	23%	70%	100%	135%	91%
17:45 - 18:00	89%	100%	38%	46%	90%	105%	173%	82%
18:00 - 18:15	78%	56%	31%	46%	97%	70%	173%	64%
18:15 - 18:30	78%	78%	31%	38%	97%	75%	81%	64%
18:30 - 18:45	78%	78%	46%	42%	97%	85%	85%	64%
18:45 - 19:00	78%	89%	46%	42%	97%	105%	100%	45%
19:00 - 19:15	44%	44%	46%	31%	87%	75%	123%	18%
19:15 - 19:30	28%	56%	46%	27%	83%	80%	123%	9%
19:30 - 19:45	22%	44%	38%	31%	83%	50%	154%	9%
19:45 - 20:00	17%	44%	31%	23%	83%	70%	131%	0%
20:00 - 20:15	17%	44%	31%	23%	73%	80%	35%	0%
20:15 - 20:30	17%	44%	31%	19%	80%	85%	23%	0%
20:30 - 20:45	11%	44%	38%	19%	87%	85%	31%	0%
20:45 - 21:00	11%	56%	31%	19%	87%	90%	31%	0%
21:00 - 21:15	11%	56%	31%	19%	87%	40%	31%	0%
21:15 - 21:30	11%	56%	31%	19%	87%	40%	31%	0%
21:30 - 21:45	11%	67%	31%	19%	83%	40%	31%	0%
21:45 - 22:00	6%	67%	31%	19%	83%	40%	31%	0%

The results show that on-street parking takes place throughout the day in Areas 2, 3, and 5. The occupancy in Area 2 fluctuates during the day between 11% and 100%.

'Illegal' parking takes place in Area 1 throughout the day, reaching a peak between 17:45 – 18:00 hours with 89% occupancy. This is also true for the Sports Centre's internal road, with On Road Parking taking place from 15:15 – 19:45 hours. There is a peak from 17:15 – 19:00 hours where the occupancy varies from 45% to 91%.

Car Park 1 was occupied throughout, with 100% occurring between 16:45 – 18:00. Car Park 2 reached peak demand from 16:30 – 20:00 hours, with an occupancy of 173% recorded from 17:45 – 18:15 hours. With the exception of a 30 minute period between 18:15 – 18:45 hours, Car Park 2 effectively exceeded its demand for a period of 3.5 hours, from 16:30 – 20:00 hours

The increase in demand, relative to the days surveyed in June 2016, is due to the East End United Football Club training.

The peak parking demand across the entire area (including on-street parking and parking within the Sports Centre) was estimated at 144 cars between 17:45 – 18:00 hours. This number is in excess of the peak demand of 109 cars which occurred between 18:30 – 18:45 hours during the Monday survey in June 2016.

From on site observations, on-street parking for the Sports Centre was estimated to occur predominantly in Areas 1 and 2. On this basis, the highest demand for Sports Centre parking was estimated at 100 vehicles between 17:45 – 18:00 hours.

3.7.5 Summary of Results from August 2016 Survey

The car parking results are summarised as follows:

- On-street parking takes place throughout the day in Areas 3 and 5.
- The demand for on-street parking in Area 2 fluctuates by time of day.
- There is strong evidence of 'illegal' parking in Area 1 throughout the day.
- Car Park 1 (the Sports Centre's front car park) regularly had an occupancy of 100% during peak periods and, from 17:45 – 18:00 hours and 18:45 – 19:00 hours, the occupancy was 105% which indicates cars were parked outwith designated parking bays e.g. on the grassed area or footpaths.
- The occupancy of Car Park 2 (the Sports Centre's rear car park) fluctuated during the day; there were times when no cars were observed parking while, at other times, its occupancy was greater than 100%, reaching a peak of 173% between 17:45 – 18:15 hours.
- The greatest parking demand (including on-street parking and parking within the Sports Centre) was estimated at 144 cars between 18:30 – 18:45 hours.
- The greatest demand for Sports Centre parking was estimated at 100 vehicles between 17:45 – 18:00 hours.

3.8 Site Visits

Site visits were undertaken to observe the operation of the network at the start and end of the school day, and also in the early evening to observe conditions when the Sports Centre was at its busiest.

3.8.1 AM Peak: Wednesday 22 June 2016

A site visit was undertaken between 08:00 – 10:00 hours on Wednesday 22 June to observe conditions in the morning peak hour. A series of photographs of typical conditions are shown in Figure 3.11, Figure 3.12 and Figure 3.13. No photographs were taken when school children were present.

Figure 3.11 : Build Outs on Bridgend Road at the North and South Bridge AM Period

Both sets of build outs were considered to operate satisfactorily. By their very nature, they cause delay to through traffic, but the delay was not operationally significant.

Figure 3.12 : Bridgend Road looking North at Gilmour Street AM Period

No operational issues were observed on Bridgend Road at Gilmour Street.

Figure 3.13 : Bridgend Road South at Sports Centre/Castle Road AM Period

On-street parking on the west side of Bridgend Road opposite the Sports Centre resulted in delays to through traffic, although these were regarded as being largely insignificant in that the delays were minimal. The on-street parking effectively acted as a traffic calming feature, similar to the build outs at the railway bridges.

From the on site observations, the road network was considered to operate satisfactorily. The footfall of children and parents on their way to school was not significant, and the network appeared to be safe for all users.

3.8.2 PM Peak: Tuesday 28 June 2016

The findings of the PM site visit were the same as those for the AM. Although there were delays to through traffic at the build outs and on Bridgend Road opposite the Sports Centre, these did not lead to congested conditions and the delays were not regarded as operationally significant.

The footfall of children and parents on their way home from school was not significant, and the network appeared to be safe for all users.

3.8.3 Evening Peak: Tuesday 23 August 2016

The operation of the evening peak appeared to be dominated by the users of the Sports Centre. The majority of drivers that parked in Area 2 were observed to go to the Sports Centre and chose to park on-street rather than in the Sports Centre's car park.

'Illegal' parking was also observed along Area 1. Again, the majority of drivers were observed as users of the Sports Centre. It was not possible to quantify the split between those using the Sports Centre or football pitches.

A series of photos taken during the site visit are shown in Figure 3.14 to Figure 3.17.

Figure 3.14 : Bridgend Road South Evening Tuesday 23 August 2016, 'Illegal' Parking in Area 1

Figure 3.14 shows the extent of 'illegal' parking that takes place in Area 1, on the east side of Bridgend Road. The footway becomes virtually unusable due to the amount of parking that takes place. Cars also park on the grass area beyond the footway.

Figure 3.15 : Bridgend Road South Evening Tuesday 23 Aug 2016 – Interaction at Junction of Sports Centre/Castle Rd

Figure 3.15 shows the congestion at the Bridgend Road/Sports Centre/ Castle Road junction. At times, traffic came to a standstill as there was no road space available to drive into in a forward gear. On occasions, cars heading south through the traffic calming feature (build-out) either stopped on their approach to let north bound vehicles through (i.e. the opposite of the intended working of the build out) or reversed back down the hill to allow northbound vehicles to proceed. This in turn helped to temporarily alleviate the congestion at the junction as vehicles were able to turn in or out, or continue along, Bridgend Road.

Figure 3.16 : Bridgend Road Sports Centre Car Park Evening Tue 23 Aug, Conditions on Internal Road

Figure 3.16 shows the congested conditions within the Sports Centre car park. Vehicles parked on the internal road between Car Parks 1 and 2 effectively reduce the link to single direction of flow. The photo on the right in Figure 3.16 shows two vehicles coming head to head and unable to pass. This was only resolved when one vehicle reversed back, usually into Car Park 1 at the front of the Centre. Although the traffic speeds were slow, the conditions also made it difficult for pedestrians. The queue within Car Park 2 often reached back to its access junction and prevented vehicles turning in from Bridgend Road.

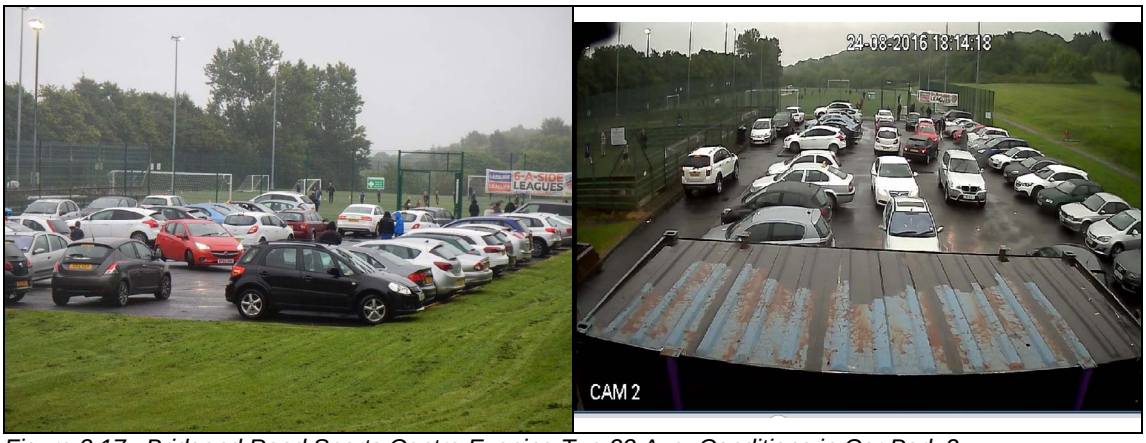


Figure 3.17 : Bridgend Road Sports Centre Evening Tue 23 Aug, Conditions in Car Park 2

Figure 3.17 shows conditions within Car Park 2. Many of the cars were not actually parked, but were associated with drop off and pick up, and so the drivers were still behind the wheel. A number of complicated manoeuvres were observed as drivers tried to negotiate their way in, around and out of the car park. Although the traffic speeds were slow, the conditions made things difficult for pedestrians.

3.9 Junction Turning Counts : 23 August 2016

The peak hour junction turning counts are shown in Figure 3.18.

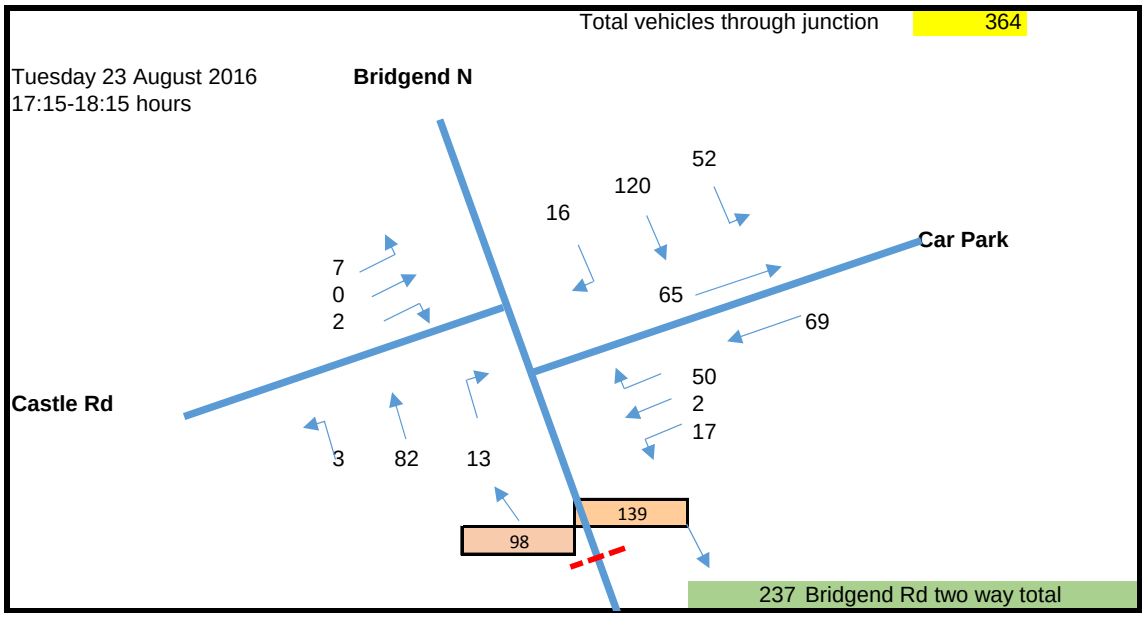


Figure 3.18 : Bridgend Road/Castle Road/Sports Centre Junction Peak Hour 17:15 – 18:15 (Vehicles)

The predominant flow to/and from the Sports Centre is from the north with 80% of all trips coming from the north and 75% leaving the car park to travel north.

The total number of trips in:out of the Sports Centre was 65:69 respectively.

While the peak hour flows at the junction could be considered to be relatively low in an urban context, the physical constraints within the network clearly lead to operational conditions that are unsatisfactory.

3.10 Summary of Existing Conditions Taking Account of all Data Collected

A summary of the existing conditions is provided below on the basis of the data collection exercise.

3.10.1 Pedestrian Counts

The volume of pedestrian activity is considered to be low in absolute terms, with short peaks in activity connected specifically to the start and end of the school day. The early evening activity is likely to be related to the usage of the sports centre.

3.10.2 Road Accidents

No road accidents have been recorded within the study area in the last three years.

3.10.3 Traffic Flow Data

The traffic flows have distinct peaks in the AM and PM periods. The PM peak is more prolonged than the AM peak.

The traffic flows, at less than 300 vehicles per hour in the peaks, are considered to be relatively low.

3.10.4 Traffic Speed Data

Mean and 85th percentile speeds are given as follows:

- Site 1 mean speed < 22mph, 85th percentile speed < 27mph
- Site 2 mean speed < 19mph, 85th percentile speed < 21mph
- Site 3 mean speed < 21mph, 85th percentile speed < 24mph

These data show that traffic speeds generally do not exceed the 30mph speed limit of the road. The speeds are lowest at Site 2, between the two bridges, which suggests the S-bends and build outs reduce traffic speeds and act as a traffic calming measure.

Traffic speeds are also considered to be low at Site 3, south of Castle Road; this could be due to the presence of on-street parking which acts as a traffic calming measure.

The highest speeds are at Site 1, north of Gilmour Street, where the road is relatively wide and straight in comparison to Site 2 and Site 3. Even at this location, the speeds are considered to be relatively low.

3.10.5 Car Park Data June 2016: No Football Training

The car parking results are summarised as follows:

- On-street parking takes place throughout the day
- There is significant evidence of 'illegal' parking in Area 1 on a day-by-day basis
- Car Park 1 (the Sports Centre's front car park) regularly has an occupancy of greater than 90% during peak periods, and often 100% or more
- The occupancy of Car Park 2 (the Sports Centre's rear car park) fluctuates during the day and on a daily basis. On each of the days, there were times when no cars were observed parking while, in each of the weekdays, its occupancy was greater than 100% at times.
- The peak occupancy at the Sports Centre was:
  - Saturday 13:30 – 15:45 hours Car Park 1 generally > 90% occupancy
  - Monday 17:30 – 21:00 hours with Car Park 1 & 2, On Road Internal and Areas 1 and 2 experiencing their highest occupancy during these periods, at times in excess of 100%
  - Thursday 17:00 – 21:15 hours, with a similar pattern to the Thursday, but with generally lower occupancy levels over a shorter duration.
- The greatest parking demand through the study area was estimated at 109 cars between 18:30 – 18:45 hours on the Monday

3.10.6 Car Park Data August 2016: With Football Training

The car parking results are summarised as follows:

- On-street parking takes place throughout the day.
- 'Illegal' parking takes place in Area 1 throughout the day, reaching a peak between 17:45 – 18:00 hours with 89% occupancy. This is also true for the Sports Centre's internal road, with On Road Parking taking place from 15:15 – 19:45 hours. There is a peak from 17:00 – 19:00 hours where the occupancy varies from 45% to 91%.
- Car Park 1 was occupied throughout the survey period, with 100% occurring between 16:45 – 18:00 hours. Car Park 2 reaches peak demand from 16:30 – 20:00 hours, with an occupancy of 173% recorded from 17:45 – 18:15 hours.
- The peak parking demand throughout the study area was estimated at 144 cars between 17:45 – 18:00 hours. This number is in excess of the peak demand of 109 cars which occurred between 18:30 – 18:45 hours during the Monday survey in June 2016.

3.10.7 Site Visit AM Peak

From the on site observations, the road network was considered to operate satisfactorily. The footfall of children and parents on their way to school was not significant, and the network appeared to be safe for all users.

3.10.8 Site Visit PM Peak (no East End United Football Club Training)

The findings of the PM site visit were the same as those for the AM. Although there were delays to through traffic at the build outs and on Bridgend Road opposite the Sports Centre, these did not lead to congested conditions, while the delays were regarded as not being operationally significant.

The footfall of children and parents on their way home from school was not significant, and the network appeared to be safe for all users.

3.10.9 Site Visit PM Peak (with East End United Football Club Training)

The operation of the evening peak appeared to be dominated by the users of the Sports Centre. The majority of drivers that parked in Area 2 (Bridgend Road west opposite the Sports Centre) were observed to go to the Sports Centre and chose to park on-street rather than in the Sports Centre's car park.

'Illegal' parking was also observed along Area 1 (Bridgend Road east from the Sports Centre's junction to Kilcreggan View). Again, the majority of drivers were observed as users of the Sports Centre.

3.10.10 Junction Turning Counts at the Sports Centre Junction

The predominant flow to/from the Sports Centre is from the North with 75% to 80% of all trips from that direction.

The total number of trips in:out of the Sports Centre was 65:69 respectively.

While the peak hour flow of 364 vehicles passing through the junction could be considered to be relatively low in an urban context, the physical constraints within the network clearly lead to operational conditions that are unsatisfactory.

3.11 Discussion of Findings

Although there may be perceptions that the study area is dangerous and that traffic speeds and volume can be high, the data does not support this view.

From impartial, on site observations undertaken by the study team, the network was considered to operate satisfactorily at the start and end of the school days. Although the traffic calming features do delay traffic, that is their purpose and, in combination with the poor forward visibility at the S-bends, traffic speeds are observed to be low in absolute terms.

Conditions change in the early evening peak which seems to coincide with activity related to the Sports Centre.

When East End United Football Club do not have training, the network becomes busier, but was considered to operate satisfactorily. There were increased instances of delays to through traffic on Bridgend Road due to more cars parking on-street, especially in Area 2 directly opposite the Sports Centre. Delays were considered to be sporadic and short lived, however, and appeared to contribute towards keeping traffic speeds low on Bridgend Road.

Cars parking on the footway in Area 1 (south of the Sports Centre access) caused an obstruction to pedestrians.

When East End United Football Club does have training, the operation of the network was considered to ‘breakdown’, with traffic regularly coming to a halt in both directions on Bridgend Road as there was no road space available. Similar conditions were apparent within the Sports Centre, with the internal road frequently blocked due to oncoming vehicles being unable to pass each other due to ‘illegally’ parked cars.

Cars were also parked on Bridgend Road’s eastern footway, to the south of the Sports Centre, over a distance of approximately 120m, which led to pedestrians either having to walk of the carriageway or grassed area to the rear.

The fact that the predominant flow to and from the Sports Centre is from the north, with 80% of all trips coming from the north and 75% leaving the car park to travel north, has a bearing on possible solutions as it draws the centre of traffic activity towards the Castle Road junction and the traffic calming at that location.

4 OPTIONS FOR CONSIDERATION

4.1 Key Issue

The key issues to be addressed are considered to be:

- Congestion within the Sports Centre car park which leads to:
  - An overspill of parking onto Bridgend Road.
  - Blocking back within the car park back to the access junction. This prevents cars from entering the car park and subsequently causes congestion on Bridgend Road.
- Parking on the eastern footway on Bridgend Road which leads to pedestrians having to walk either on the carriageway or grassed area
- Parking on the corner of Bridgend Road/Castle Road which takes up road space on Bridgend Road and contributes to the congestion in and around the junction

Any engineering solutions should therefore seek to address one or more of the following issues:

- Improve car parking within the Sports Centre car park
- Rationalise the access and egress arrangements at the Sports Centre to at least remove some traffic from its junction with Bridgend Road/Castle Road
- Address the issue of on-street parking on Bridgend Road to discourage cars from parking on the footway

These are considered below in more detail.

4.2 Improve Car Parking Within the Sports Centre

4.2.1 Increase Capacity of Car Park 1

Although Car Park 1 at the front of the Sports Centre is constrained by its surroundings, investigate opportunities to provide additional parking.

4.2.2 Increase Capacity of Car Park 2

Car Park 2 at the rear is currently unmarked and cars park informally. It may be possible to create more capacity with the provision of formally marked out bays.

4.2.3 Increase Capacity of Car Parks 1 & 2

Car Parks 1 and 2 do not have sufficient capacity to cater for the peak demand. The possibility of providing more parking elsewhere within the site should be explored.

4.2.4 Operation of Internal Road

Car parking on the internal road causes congestion within the car park. If parking was banned from these areas, and enforced (although that may not be possible), this would free up movement within the car park and reduce the likelihood of cars blocking back affecting the operation of Bridgend Road. It is likely however that if there were no alternative spaces within the car park, displaced cars would park on Bridgend Road or Castle Road, which could exacerbate the existing congestion in that area.

4.2.5 Outcomes - Improve Car Parking Within the Sports Centre

The following initiatives will be considered:

- Investigate opportunities to provide additional spaces in Car Park 1
- Formally mark out bays in Car Park 2
- Investigate providing more parking spaces elsewhere within the site

4.3 Rationalise Access and Egress Arrangements at the Sports Centre

4.3.1 Geometry of Access Junction

The geometry on the corners is substandard, particularly for the predominant flow from the north. It may be possible to increase the corner radii with no loss of parking spaces.

4.3.2 Geometry of Access Road

Although the road width at the access is generally 6m, the substandard corner radii can cause vehicles to stray onto the opposite side of the road. It may be possible to increase the width of the access road with no loss of parking spaces.

4.3.3 Geometry of Internal Road

Cars parked on the internal road prevent simultaneous two-way operation. Parking could be banned, but this would be difficult to enforce. Alternatively the road could be widened to allow a free flow of traffic under these circumstances.

4.3.4 Outcomes - Rationalise Entry and Exit Arrangements at the Sports Centre

The following initiatives will be considered:

- Increase the corner radii at the access junction with no loss of parking spaces
- Increase the width of the access road with no loss of parking spaces
- Increase the width of the internal road

4.4 Rationalise Vehicle Circulation within the Car Park

It is considered that the concentration of traffic movements at the Bridgend Road/ Castle Road/Sports Centre junction is a key contributor to congestion during busy times. A secondary access point should help to alleviate some of the worst impacts.

In order to understand existing conditions, a junction turning count was undertaken on 23 August 2016. A number of options were then considered in the context of the changes that would come about in traffic movements on Bridgend Road between the existing junction and a new junction serving the Sports Centre car park.

These are set out in the following figures:

- Figure 4.1 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Existing Conditions
- Figure 4.2 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 1: In at Existing Junction and Out at New Junction
- Figure 4.3 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 2: Out at Existing Junction and In at New Junction
- Figure 4.4 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 3 Two-Way Operation at Both Junctions - Assumes Vehicles use Nearest Junction to Their Direction of Travel
- Figure 4.5 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 3A Two-Way Operation at Both Junctions - Assumes Vehicles use Junction to suit their Activity at Sports Centre (0.33:0.67 split assumed)

4.4.1 Existing Conditions

The existing conditions are shown again in Figure 4.1 for reference only; also shown is the total number of vehicle movements at the Bridgend Road/Castle Road/Sports Centre junction and the two-way flows on Bridgend Road south of that junction.

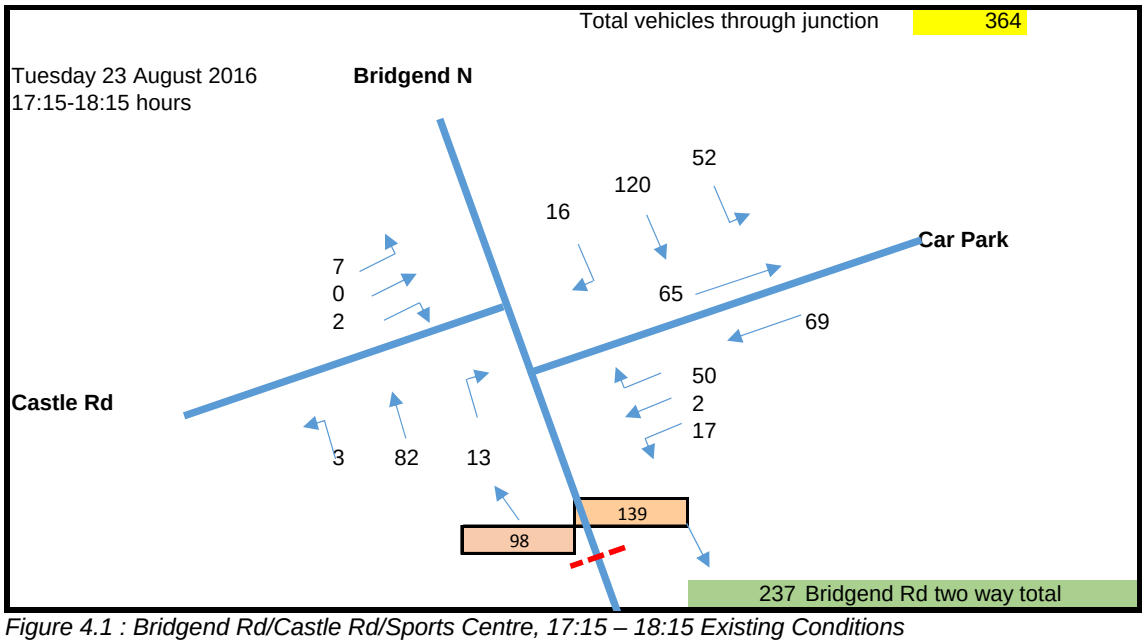


Figure 4.1 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Existing Conditions

The predominant flow to and from the Sports Centre is from the north with 80% of all trips coming from the north and 75% leaving the car park to travel north.

The total number of trips in:out of the Sports Centre was 65:69 respectively.

4.4.2 Option 1: In only at Existing North Junction and Out only at New South Junction

Option 1 separates the in and out movements, with the in only at the existing north junction and out only at the new south junction. The resulting turning movements are shown in Figure 4.2, along with the difference in flows at the existing junction, and on Bridgend Road.

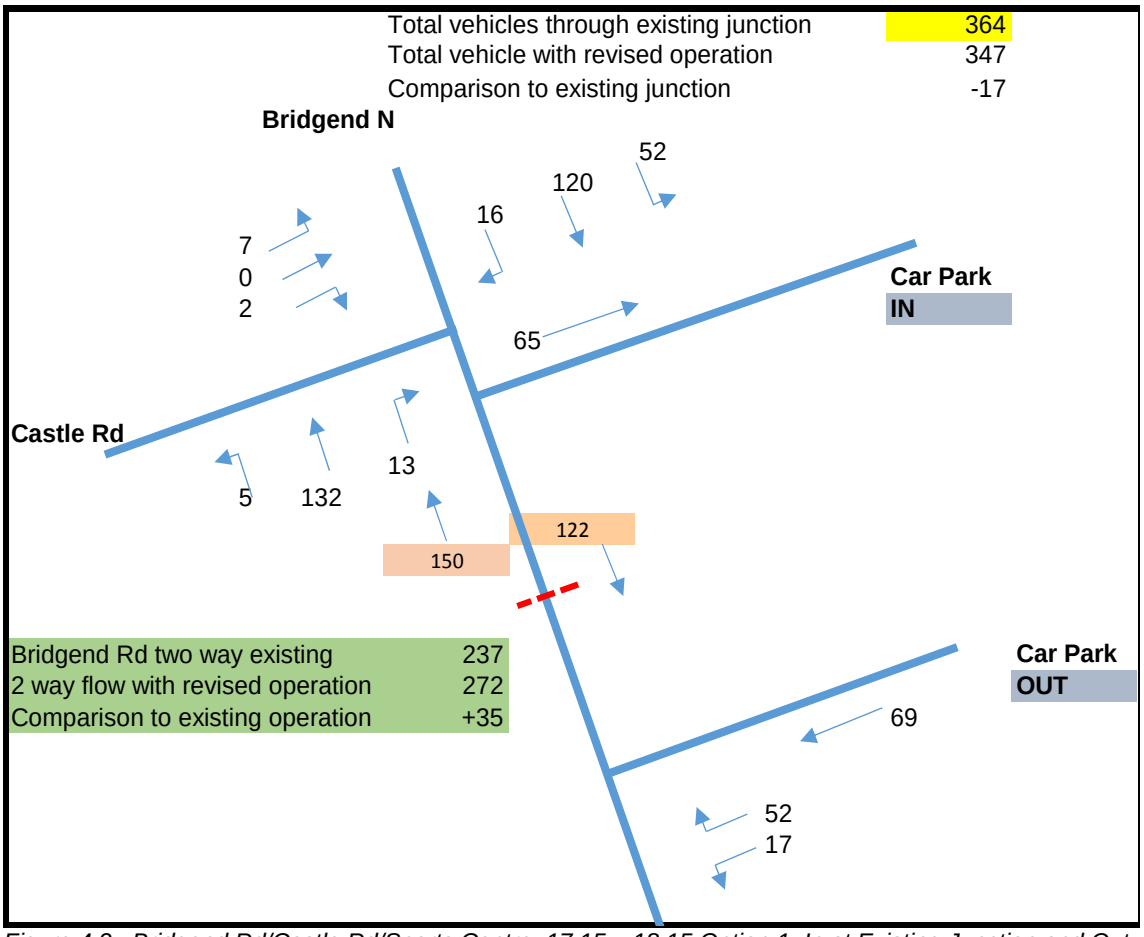


Figure 4.2 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 1: In at Existing Junction and Out at New Junction

As shown in Figure 4.2, Option 1 reduces the number of movements at the existing access junction by 17 vehicles but increases the two-way flow on Bridgend Road, south of the existing junction, by 35 vehicles.

While Option 1 may benefit the existing access junction, it may cause more congestion on Bridgend Road to the south as there will be more traffic activity in that area.

The reassignment of vehicles is known with Option 1 as drivers have no choice in how they enter/exit the car park.

4.4.3 Option 2: Out only at Existing North Junction and In only at New South Junction

Option 2 separates the in and out movements, with out only at the existing north junction and in only at the new south junction. Option 2 would remove vehicles from turning right into the Sports Centre within close proximity of the build out traffic calming feature. The resulting turning movements are shown in Figure 4.3, along with the difference in flows at the junction, and on Bridgend Road.

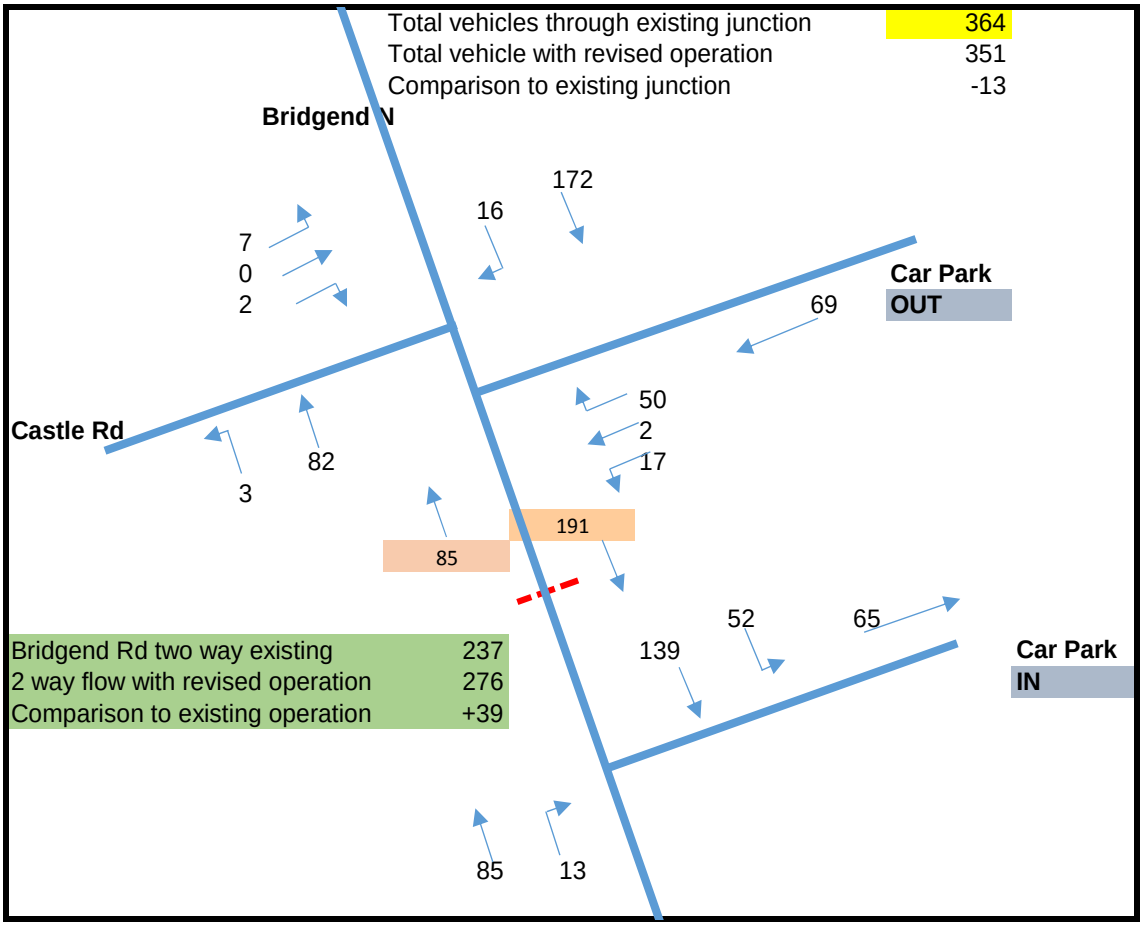


Figure 4.3 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 2: Out at Existing Junction and In at New Junction

As shown in Figure 4.3, Option 2 reduces the number of movements at the existing access junction by 13 vehicles, but increases the two-way flow on Bridgend Road, south of the existing junction, by 39 vehicles.

While Option 2 may benefit the existing access junction, it may cause more congestion on Bridgend Road to the south as there will be more traffic activity in that area.

The reassignment of vehicles is known with Option 2 as drivers have no choice in how they enter and exit the car park.

4.4.4 Option 3: Two-Way Operation at Both Junctions – assumed vehicles use access closest to their direction of travel

Option 3 is shown in Figure 4.4. Drivers would have the choice of which entry/exit to use and both would be two-way operation. For the purposes of this exercise, it has been assumed that drivers use the junction nearest to their direction of travel, so all trips to/from the north use the northern junction and those from the south use the southern junction.

In reality, this could mean driving through the car park to get to their destination, although this is effectively how the current layout operates.

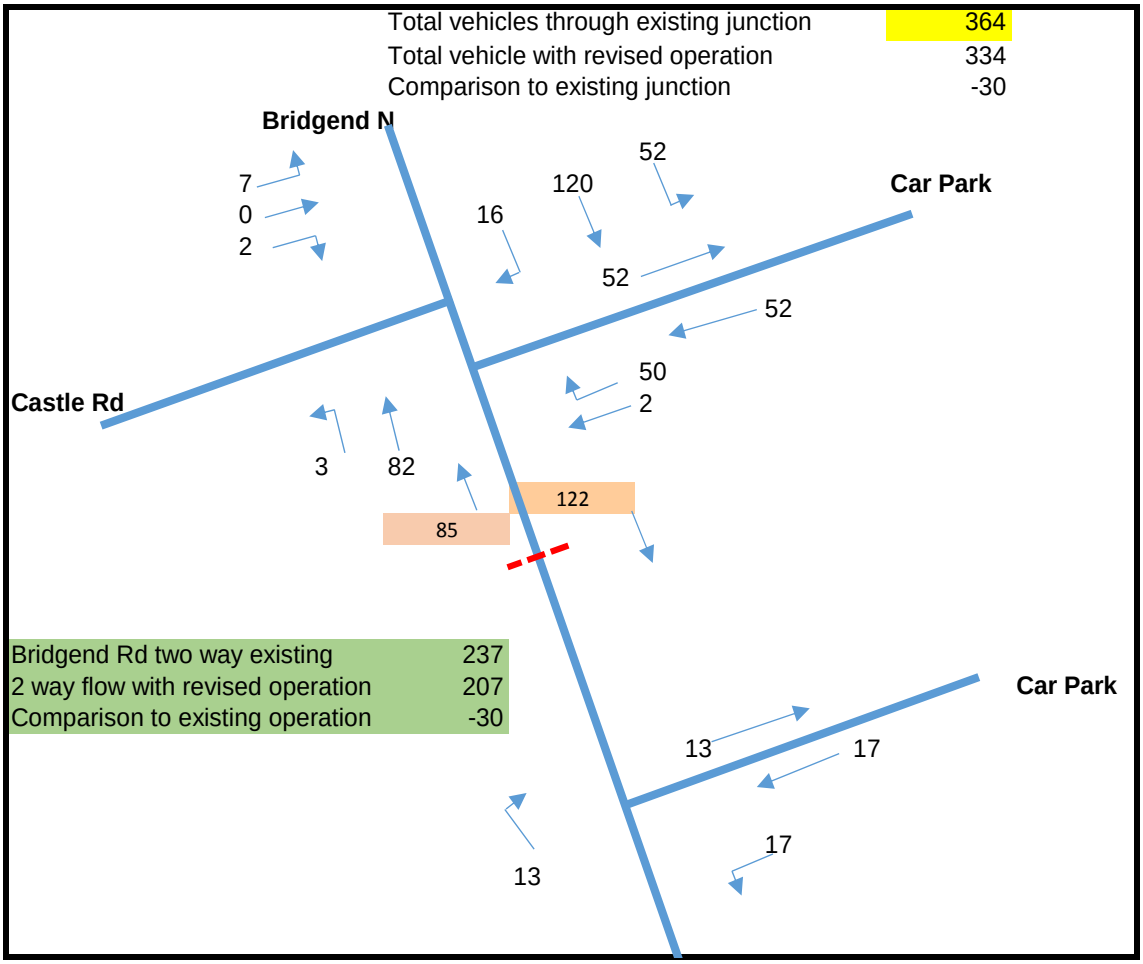


Figure 4.4 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 3 Two-Way Operation at Both Junctions - Assumes Vehicles use Nearest Junction to Their Direction of Travel

As shown in Figure 4.4, this option reduces the number of movements at the existing access junction, and the two-way flow on Bridgend Road south of the existing junction, by 30 vehicles.

This option would appear to bring about benefits as it reduces vehicle movements at both locations, however, it has to be noted that drivers would have a choice of which entry/exit they wanted to use. The traffic movements shown in Figure 4.4 are based on a simplistic assumption that may not reflect the reality of the situation.

An alternative flow scenario is considered as Option 3A in Section 4.4.5.

4.4.5 Option 3A: Two-Way Operation at Both Junctions – assumed vehicles use access closest to their desired car park

In Section 4.4.4, it has been assumed that all trips to/from the north use the northern junction to enter and exit the car park. In reality, if a driver's destination is Car Park 2 then they may choose to enter/leave from the southern junction, as opposed to driving through the Car Park 1. This would result in different traffic movements; an example is given in Figure 4.5.

Figure 4.5 considers a different distribution of trips, with 33% using the existing northern junction and 66% using the new southern junction. This gives a better reflection on where the parking spaces are actually located within the two car parks.

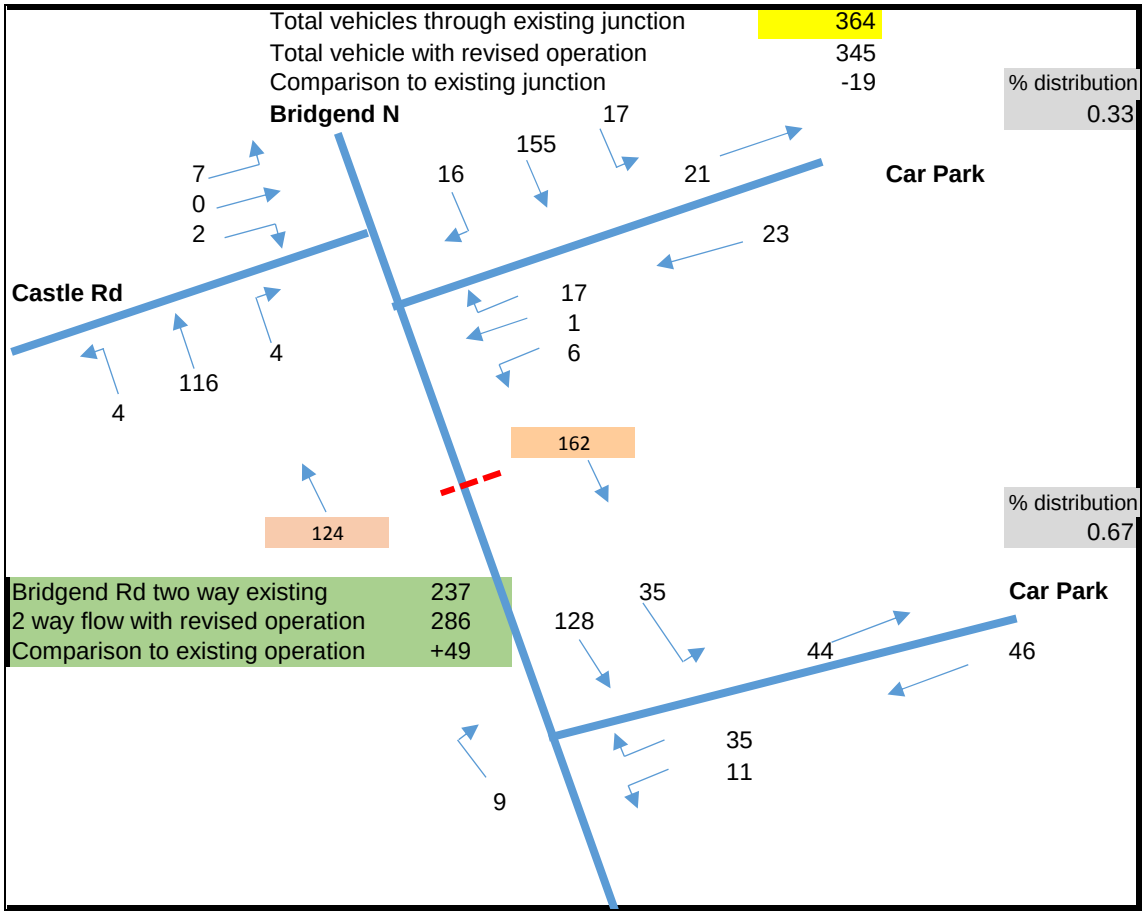


Figure 4.5 : Bridgend Rd/Castle Rd/Sports Centre, 17:15 – 18:15 Option 3A Two-Way Operation at Both Junctions - Assumes Vehicles use Junction to suit their Activity at Sports Centre (0.33:0.67 split assumed)

As shown in Figure 4.5, this assumption reduces the number of movements at the existing access junction by 20 vehicles, but increases the two-way flow on Bridgend Road south of the existing junction by 50 vehicles.

While this distribution of trips would benefit the existing access junction, it may cause more congestion on Bridgend Road to the south of the existing access, as there will be more traffic activity in that area.

4.4.6 Outcome: Rationalise Vehicle Circulation within the Car Park

All Options have a number of merits but also issues associated with them.

Options 1 and 2 have no driver choice and so it is easier to predict resulting traffic movements were either to be implemented.

Options 3 and 3A have driver choice and so the resulting traffic movements cannot be known, as they could either reduce or increase the amount of traffic activity on Bridgend Road south of the existing access.

All options reduce traffic movements at the northern junction.

Options 1 and 2 would lead to an increase in traffic movements on Bridgend Road south of the existing junction. Although this may also be the case with Option 3A, it is also possible that traffic movements would be reduced, depending on drivers' route choice (Option 3).

It is considered that the implementation of Option 3 provides the best likelihood for reducing congestion in the study area.

4.5 Rationalise Parking on Bridgend Road

4.5.1 Cars Parking on the Footway

Cars are observed to park on the eastern footway of Bridgend Road, with numbers varying throughout the day. The provision of a Traffic Regulation Order (TRO) would help to alleviate this issue.

As an alternative, additional on-street parking spaces could be considered through the provision of parallel parking bays on the east side of Bridgend Road.

4.5.2 Cars Parking Adjacent to the Bridgend Road/Castle Road Junction

Parking on the corner of Bridgend Road/Castle Road contributes towards the congested conditions during busy periods as it takes up road space on Bridgend Road. The provision of a TRO could help alleviate this issue and free up road space close to the Castle Road / Sports Centre junction as well as the build out traffic calming feature.

4.6 Outcomes - Rationalise Parking on Bridgend Road

The following initiatives will be considered:

- The introduction a TRO on the corner of Bridgend Road/Castle Road
- The introduction of a TRO on the east side of Bridgend Road from the railway bridge to Kilcreggan View
- The provision of on-street parking bays on the east side of Bridgend Road

4.7 Summary of Options to be Considered

The following options will be taken forward into the development of design options:

- Investigate opportunities to provide additional spaces in Car Park 1
- Formally mark out bays in Car Park 2
- Investigate providing more parking spaces elsewhere within the site
- Increase the corner radii at the access junction with no loss of parking spaces
- Increase the width of the access road with no loss of parking spaces
- Increase the width of the internal road
- Provide a new southern junction onto Bridgend Road (Option C) with both junctions providing two-way flow
- The introduction of a TRO on the corner of Bridgend Road/Castle Road
- The introduction of a TRO on the east side of Bridgend Road from the railway bridge to Kilcreggan View
- The provision of on-street parking bays on the east side of Bridgend Road

A number of Schemes are considered in the following section, which take account of these design options.

5 SCHEMES TO BE CONSIDERED

5.1 Options Considered But Discounted

5.1.1 Changes to the existing Traffic Calming

The current builds outs (horizontal traffic calming) seem to be effective in slowing vehicle speeds but they prevent simultaneous two-way operation which does contribute the congestion at the Bridgend Road/Castle Road/Sports Centre junction during busy periods.

The possibility of changing the traffic calming from horizontal to vertical (speed cushions) has been considered. Vertical features would raise vehicle heights as they pass over the traffic calming. SIAS understands that the implications have been discussed by IC road engineers who have concerns that this type of feature would heighten the risk of bridge collisions when high vehicles negotiate the vertical traffic calming.

For this reason the provision of vertical traffic calming measures, such as speed cushions, has not been taken forward.

The existing horizontal traffic calming measures are effective as they work throughout the day, every day of the week, throughout the year. The congestion experienced at the southern traffic calming feature adjacent to Bridgend Road/Castle Road/Sports Centre junction is short lived in that context, in that it only occurs for approximately one hour over 2 or 3 evenings per week during the football season.

It is therefore recommended that there are no changes to the existing horizontal traffic calming measures, and the existing build outs remain in place.

5.1.2 'Straighten Out' the S-bends

While these can at times be difficult or awkward for drivers to negotiate because of the geometry and restricted forward visibility, they contribute towards low traffic speeds. Furthermore, as there were no recorded accidents during the last three years, they do not appear to constitute a safety hazard. Providing a straight road would likely increase traffic speeds and the risk and severity of accidents,

'Straightening out' the S-bends would present a significant engineering challenge, not least because of the live railway that operates over the southern bridge, which would involve third part land belonging to Network Rail.

The costs associated with this scheme would also be significant.

It is therefore recommended that the alignment of the S-bends is not altered.

5.1.3 Widen Bridgend Road

As there is no tenable reason for widening under the railway bridges and straightening out the S-bends, widening Bridgend Road in itself would not address the issues of congestion as the bottleneck at the bridges and S-bend would remain.

Widening would only be effective if it was implemented from Kilcreggan View to Gilmour Street, and included the two bridges and the S-bends. This would result on a relatively straight, downhill section which could lead to other road safety issues such as higher speed, especially northbound down hill.

Speed is a major contributing factor to severity of injury in road accidents and widening Bridgend Road from Kilcreggan View to Gilmour Street is likely to result in increased traffic speeds, particularly northbound.

It is, therefore, recommended that widening Bridgend Road from Kilcreggan View to Gilmour Street is not taken forward.

5.2 Initial Option Design

The following traffic management measures have been developed with the aim of addressing existing operational issues at the Lady Octavia Sports Centre. These issues are generally the result of the relationship between the Sports Centre's single vehicular access, Castle Road, the proximity to the railway bridge and the on-street parking, all of which creates a 'bottleneck' effect during peak periods of activity.

In turn, this bottleneck effect could have a potential impact on road safety, particularly along the east side of Bridgend Road where vehicles park on the footway and on occasions on the adjacent grass verge.

From the information gathered during site visits and discussions with IC a number of options have been generated that offer a benefit to traffic (both road and Sports Centre traffic) and, as a consequence, provide a safer environment for pedestrians.

A number of options were, therefore, considered as set out as follows:

- Option A
  Create a second vehicular access to the Sports Centre, further south on Bridgend Road. This would operate as an exit only, while the existing junction to the north would be an entry only.
- Option B
  Create a second vehicular access to the Sports Centre further south on Bridgend Road. This would operate as an entry only, while the existing access to the north would be an exit only.
- Option C
  Create a second vehicular access to the Sports Centre further south on Bridgend Road. Both the existing and new access would operate as two-way.
- Option D
  Provide additional on-street parking on east side of Bridgend Road with the provision of parallel parking bays
- Option E
  Introduce a Traffic Regulation Order on the east side of Bridgend Road from the railway bridge to Kilcreggan View

5.3 Option A: Create a new junction at Sports Centre – in at existing junction and out at new south junction

5.3.1 Option A Design Summary

This option creates a secondary vehicular access to the sports centre. This access would be further south on Bridgend Road (in proximity to the cul-de-sac accessed from Bridgend Road). The access arrangements would operate as entry only at the existing north junction and exit only at the new southern junction.

An indicative layout of Option A is indicated in Figure 5.1 and as a full A4 page in Appendix A.

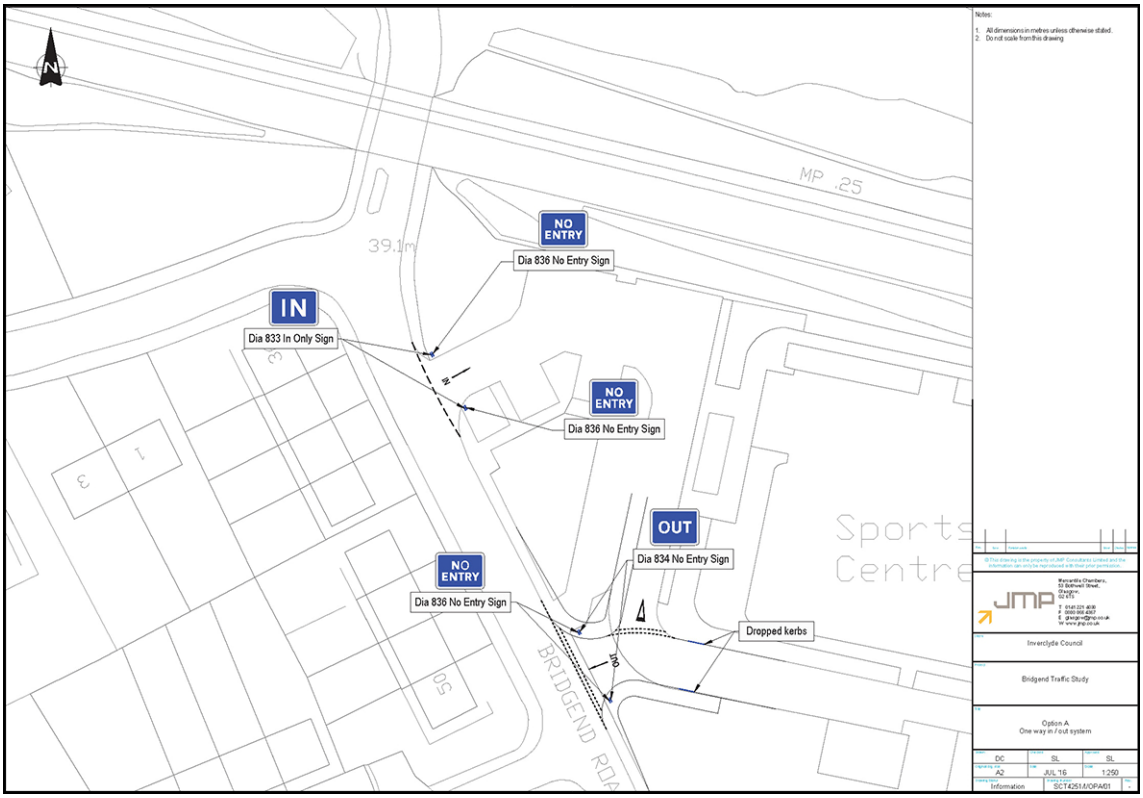


Figure 5.1 : Option A In at Existing Junction and Out at New Junction

5.3.2 Option A: Strengths

By providing a second point of access to the sports centre, it will reduce the level of activity that currently takes place at the existing junction (see Section 4.4.2) which will reduce the number of potential conflicts that arise at that location.

Creating a second access to the south may also improve the use of the rear car park on the basis that drivers would not be required to route through the car park when entering/exiting via a single access and so could remove some on-street parking, however, this is unlikely to be of any significant benefit on East End United Football Club training nights, as the car park (and the internal roads) already operate over capacity during this period. While this is the critical period in terms of activity at the sports centre, this only occurs for a 'relatively' short period of time and only on two to three evenings out of the week during the football season.

5.3.3 Option A: Weaknesses

Operating a one-way in and out will increase the volume of northbound traffic on Bridgend Road between the existing and new junction (see Figure 4.2), which is a potential road safety risk during busier periods at the Sports Centre.

From the results of the traffic survey from 23 August 2016, this arrangement would result in 52 vehicles turning right to exit the Sports Centre and would be required to 'pass through' this 'bottleneck' section, therefore increasing the potential for conflicts for both vehicles and pedestrians.

Two points of access as proposed by Option A would not address the shortfall in parking provision within the Sports Centre and consequently, on-street parking that currently occurs would continue.

5.3.4 Option A: Indicative Costs

Indicative costs to be confirmed but will take into consideration:

- Constructing new access: £15,000
- Signage: £1,100
- Lining: £75
- Drainage: £6,000
- Utilities:
  Gas, electricity, BT, and water utilities will all potentially be affected by this option. Suggest a notional £20,000 per utilities = £80,000
- Construction traffic management such warning signs, safe working areas and potentially stop/go boards to control the flow of traffic should construction reduce Bridgend Road to one lane (to maintain a safe working environment). Traffic management costs are typically £1,000 to set up plus £1,000 to take down, and approximately £500 per day thereafter.

Not including traffic management, the estimated cost for Option A is £102,175.

5.4 Option B: Create a new junction at the Sports Centre – out at existing junction and in at new south junction

5.4.1 Option B: Design Summary

This creates a secondary vehicular access to the Sports Centre. This access would be further south on Bridgend Road (in proximity to the cul-de-sac accessed from Bridgend Road). The access arrangements would operate as exit only at the existing north junction and entry only at the new southern junction.

An indicative layout of Option B is indicated in Figure 5.2 and as a full A4 page in Appendix A.

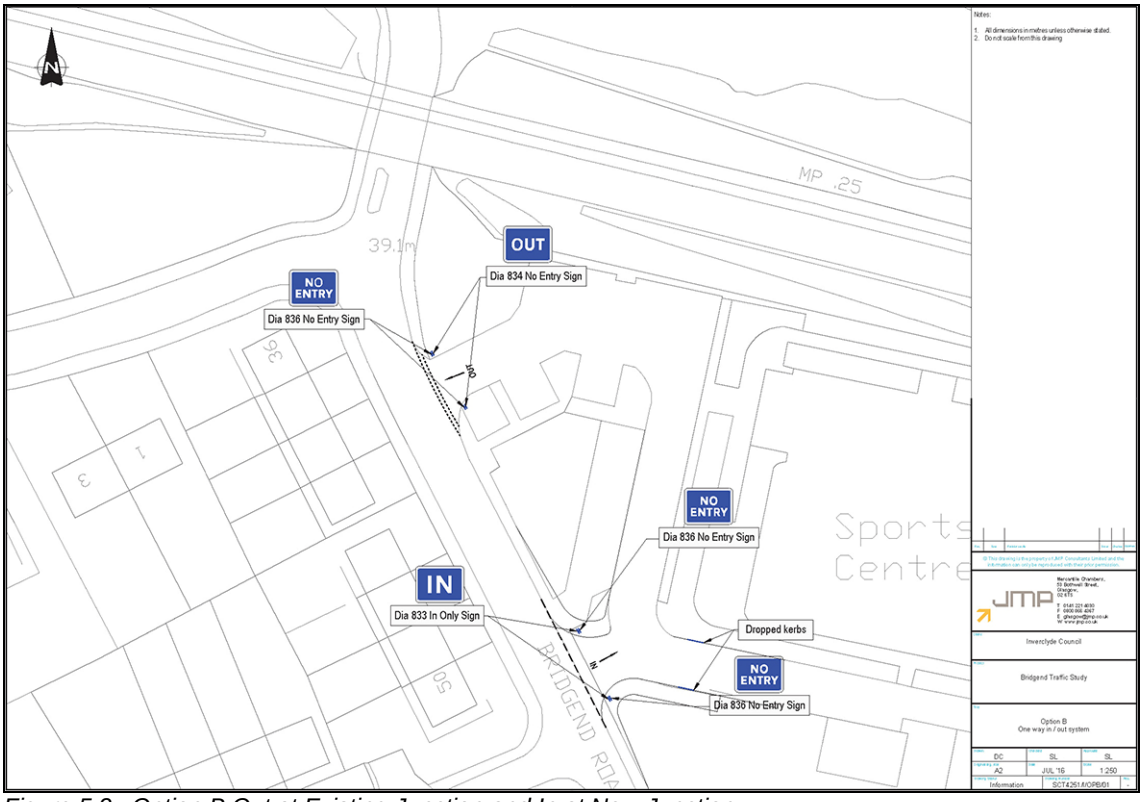


Figure 5.2 : Option B Out at Existing Junction and In at New Junction

5.4.2 Option B: Strengths

By providing a second point of access to the sports centre, it will marginally reduce the level of activity that currently takes place at the existing access (see Section 4.4.3), which will reduce the number of potential conflicts that arise at that location.

5.4.3 Option B: Weaknesses

Option B will increase the volume of (southbound) traffic on Bridgend Road between the existing and new junction (see Figure 4.3), which is a potential road safety risk during busier periods at the Sports Centre, similar to those related to Option A as set out in Section 5.3.3.

The traffic survey from 23 August 2016 indicated that 52 cars turn left into the existing access. With Option B, these 52 vehicles would now be required to 'pass through' this bottleneck section southbound when entering the Sports Centre, therefore increasing the potential for conflicts for both vehicles and pedestrians.

Two points of access as proposed by Option B would not address the shortfall in parking provision in the Sports Centre and consequently, on-street parking that currently occurs would continue.

5.4.4 Option B: Indicative Costs

Indicative costs would be the same as for Option A. These are to be confirmed but will take into consideration:

- Constructing new access: £15,000
- Signage: £1,100
- Lining: £75
- Drainage: £6,000
- Utilities:
  Gas, electricity, BT, and water utilities will all potentially be affected by this option. Suggest a notional £20,000 per utilities = £80,000
- Construction traffic management such warning signs, safe working areas and potentially stop/go boards to control the flow of traffic should construction reduce Bridgend Road to one lane (to maintain a safe working environment). Traffic management costs are typically £1,000 to set up plus £1,000 to take down, and approximately £500 per day thereafter.

Not including traffic management, the estimated cost for Option B is £102,175.

5.5 Option C: Create a second vehicular access to the Sports Centre, further south on Bridgend Road. Both the existing and new access would operate as two-way

5.5.1 Option C Design Summary

As with Options A and B, a secondary access would be created to the south of the existing access on Bridgend Road (with improvements to the existing access in the form of increased width and radii). Unlike Options A and B, both the existing and new junction would operate as two-way.

An indicative layout of Option C is indicated in Figure 5.3 and as a full A4 page in Appendix A.

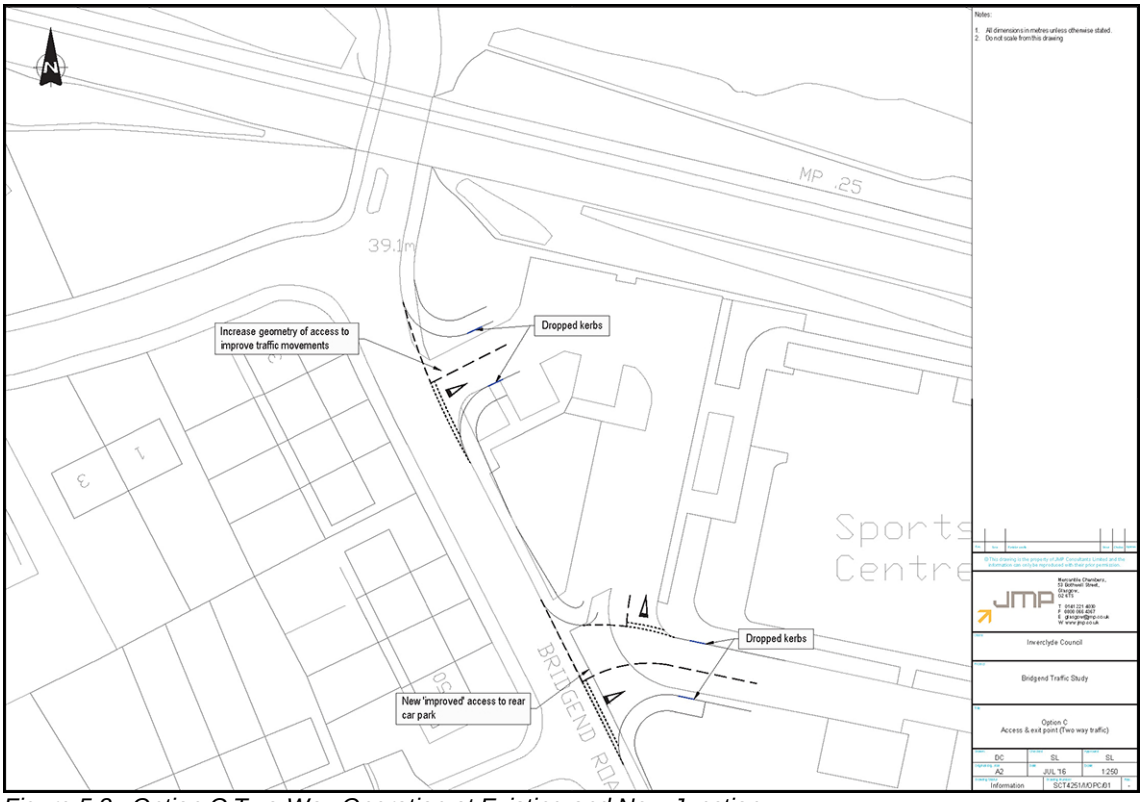


Figure 5.3 : Option C Two-Way Operation at Existing and New Junction

5.5.2 Option C: Strengths

As with Options A and B, having two points of access would reduce the level of activity (and potential conflicts) currently taking place at the existing access (see Sections 4.4.4 and 4.4.5). It could also result in a reduction in traffic movements at the bottleneck section of Bridgend Road depending on which entrance or exit drivers chose to use.

5.5.3 Option C: Weaknesses

Option C would not address the shortfall in parking provision that is known to occur in both car parks within the site and consequently, on-street parking that currently occurs could still continue, requiring pedestrians to use either the verge or carriageway.

As set out in Sections 4.4.4 and 4.4.5, Option C could result in an increase in traffic movements at the 'bottleneck' section of Bridgend Road, depending on which entry or exit drivers choose to use.

5.5.4 Option C: Indicative Costs

Indicative costs to be confirmed but will to take into consideration:

- Constructing new access: £15,000
- Lining: £200
- Drainage: £6,000
- Utilities:
  Gas, electricity, BT, and water utilities will all potentially be affected by this option. We would suggest a notional £20,000 per utilities = £80,000
- Construction traffic management such warning signs, safe working areas and potentially stop/go boards to control the flow of traffic should construction reduce Bridgend Road to one lane (to maintain a safe working environment). Traffic management costs are typically £1,000 to set up plus £1,000 to take down, and approximately £500 per day thereafter.

Not including traffic management, we would estimate the cost for Option C to be £101,200.

5.6 Option D: Provide additional On-Street Parking on East Side of Bridgend Road

5.6.1 Option D: Design Summary

Option D recognises the shortfall in parking that is known to occur during the busier periods of the day (in particular during East End United Football Club training), by constructing a parking lay-by along the eastern side of Bridgend Road, with a realigned footway. Parking spaces would be a minimum of 2m x 6m.

While it is recognised that the National Roads Development Guide (NRDG) suggests a minimum width of 2.5m for parallel parking spaces (i.e. this lay-by), the 2m wide bay would still be of a sufficient width to allow a car to pass while another car may be parked on the west side of the Bridgend Road. Nevertheless, at this location, Bridgend Road is approximately 6m wide. While the on-street parking spaces indicated have a width of 2m, if a wider bay of 2.5m was adopted, this still leaves 5.5m of available carriageway which would be sufficient to allow a car to pass when cars are parked on both sides of Bridgend Road, i.e. on the west kerb and the proposed east lay-by.

The NRDG (Part 3, Figure 15) indicates that a minimum width of 4.1m is required to allow two cars to pass (or for a car to pass a parked car as would be the case here), or 4.8m to allow a car to pass an HGV. The proposals would provide sufficient road width to allow a car to pass if vehicles were parked on both sides, as described above.

An indicative layout for Option D is shown in Figure 5.4 and as a full A4 page in Appendix A, while Figure 15 from the NRDG is reproduced in Figure 5.5.

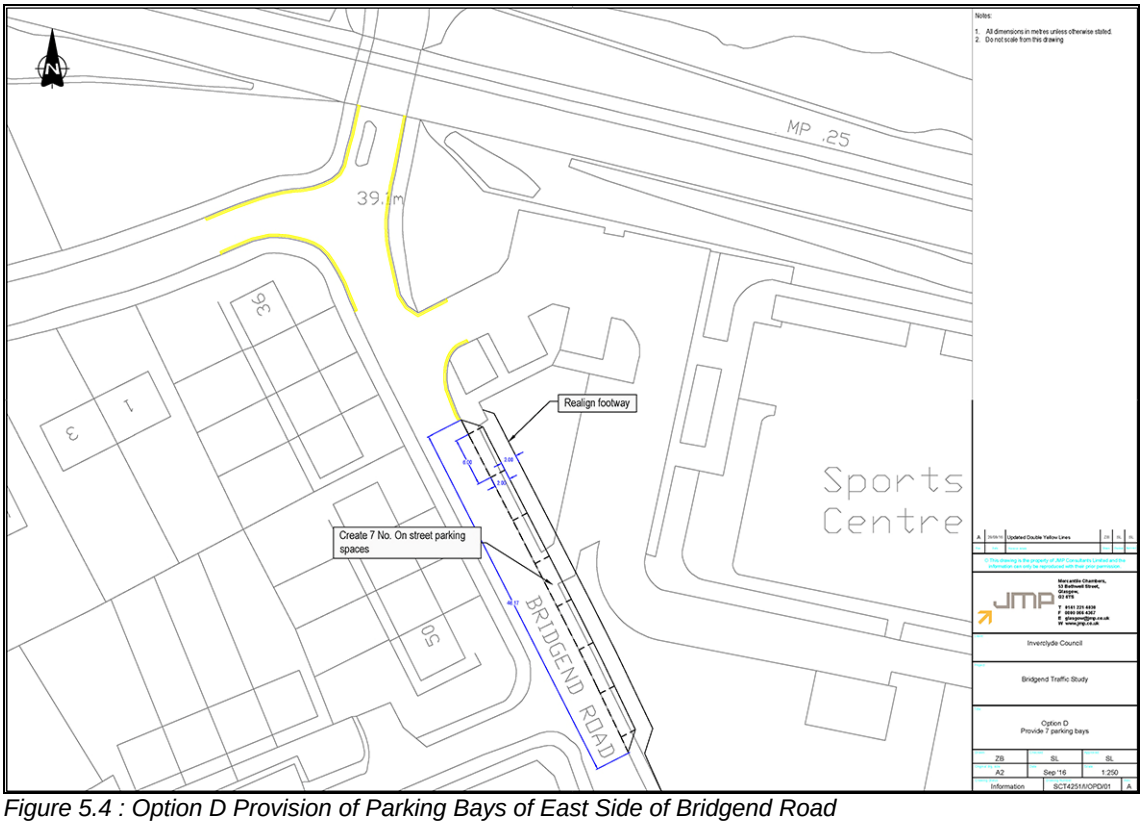


Figure 5.4 : Option D Provision of Parking Bays of East Side of Bridgend Road

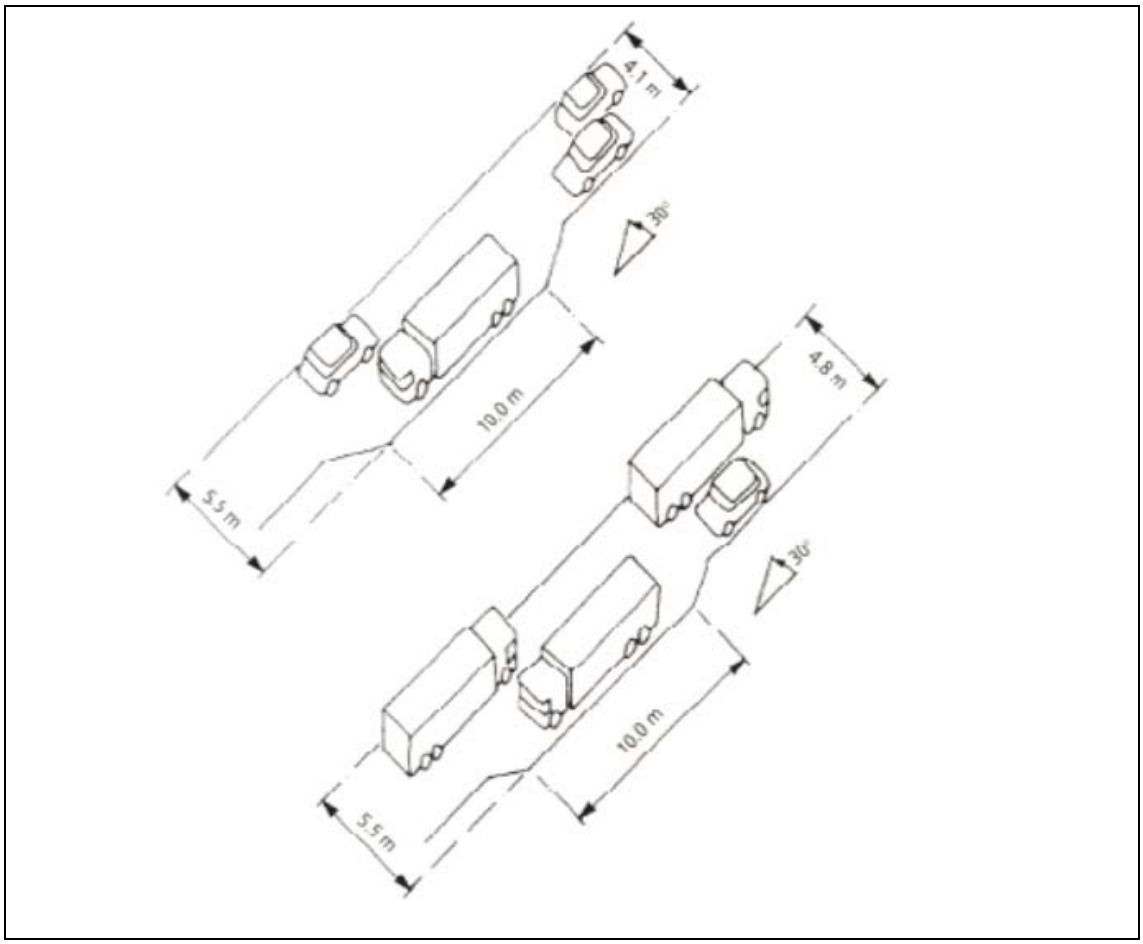


Figure 5.5 : National Roads Development Guidelines, Figure 15

5.6.2 Option D: Strengths

A formal parking lay-by on Bridgend Road would remove vehicles from parking on the footway on the east side of Bridgend Road. This in turn would have a significant benefit for pedestrians and the mobility impaired as they would no longer have to walk on the road or verge.

5.6.3 Option D: Weaknesses

A parking lay-by would not address the level of activity and congestion that can occur at the existing access.

The lay-by is unlikely to increase the attractiveness of using the sports centre car park, particularly the area to the rear.

It would not address the shortfall in parking numbers within the Sports Centre.

5.6.4 Option D: Indicative Costs

Indicative costs to be confirmed but will take into consideration:

- Constructing lay-by: £10,000
- Realigning footway: £5,000
- Lining: £200
- Drainage: £6,000
- Utilities:
  Gas, electricity, and water utilities will all potentially be affected by this option. We would suggest a notional £20,000 per utilities = £60,000
- Construction traffic management such warning signs, safe working areas and potentially stop/go boards to control the flow of traffic should construction reduce Bridgend Road to one lane (to maintain a safe working environment). Traffic management costs are typically £1,000 to set up plus £1,000 to take down, and approximately £500 per day thereafter.

Not including traffic management, the estimated cost for Option D is £81,200.

5.7 Option E: Traffic Regulation Order (TRO) on East Side of Bridgend Road from Railway Bridge to Kilcreggan View and at the Bridgend Road/Castle Road Junction

5.7.1 Option E: Design Summary

Option E seeks to address the prevalent issue of on-street parking currently taking place along the east side of Bridgend Road, by implementing a TRO between the railway bridge and Kilcreggan View. A TRO would also be introduced on the corner of the Castle Road/ Bridgend Road junction to prevent cars parking at this location.

An indicative layout of Option E is shown in Figure 5.6 and as a full A4 page in Appendix A.

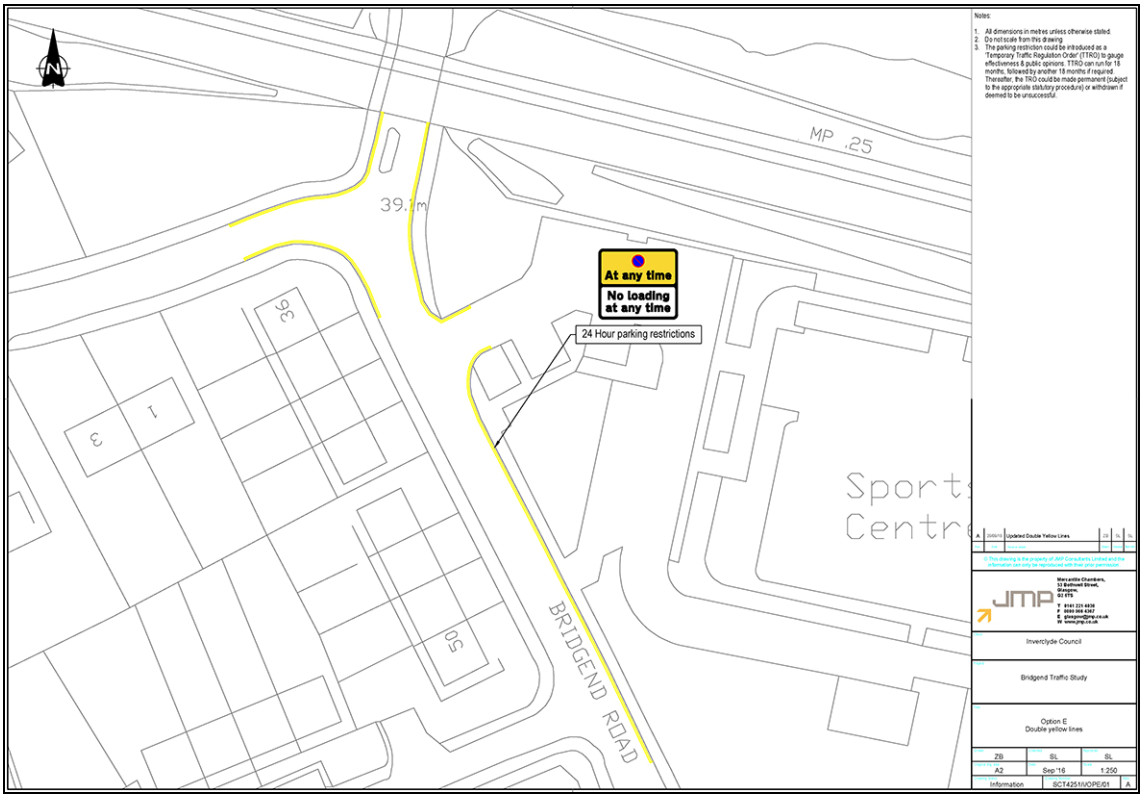


Figure 5.6 : Option E, Provision of TRO on East Side of Bridgend Road and at Bridgend Road/Castle Road Junction

5.7.2 Option E: Strengths

TROs are not only applicable to parking on the road, but also encompass the footway, extending from the heel kerb to heel kerb (back of footway).

If a TRO was to be implemented, it would remove, or at least reduce, the level of on-street parking that currently takes place, and make conditions easier for pedestrians and mobility impaired that have to use the road or verge when the footway is blocked by parked cars.

The introduction of a TRO would allow these vehicles to be given penalty charge notices. Under the current arrangement, only Police Scotland can enforce footway parking as an obstruction.

The TRO at the Bridgend Road/Castle Road junction would be introduced to prevent cars parking at that location and so free up road space at peak times.

5.7.3 Option E: Weaknesses

Parking restrictions on the public road network (and some private roads) can only be implemented and enforced if a TRO has been promoted. A TRO is subject to a statutory legal process that involves consultation with a number of parties including the emergency services, local councillors, community groups, freight and public transport providers, and the general public.

Unfortunately, it is not possible to guarantee the success of a TRO as it is subject to the outcome of the consultation process. As a general rule of thumb, it can take in region of 6 – 12 months to complete the process, but this is subject to any objections that are received and also the availability of committee dates or an Independent Reporter.

Introducing parking restrictions within residential areas can move the ‘problem’ to another area which in turn can lead to objections and complaints from other residents. Parking restrictions are only effective with continued enforcement by Parking Attendants. Parking in the study area in general appears to be unrestricted and so it is possible that enforcing these parking restrictions would be on an ad-hoc basis.

It is acknowledged that the main issues regarding on-street parking occur outwith the current hours of enforcement. It is understood these hours may be reviewed to encompass the periods of peak demand associated with the Sports Centre.

5.7.4 Option E: Indicative Costs

The ‘physical’ costs to implement these parking restrictions would be negligible as only some lining and signing is required. There would be administration costs for the TRO process (preparing the orders, advertising, consultation, etc.) but, as Inverclyde Council would effectively be the applicant, these costs are likely to be low. The indicative cost to implement a TRO is estimated at between £1,500 to £2,500.

5.8 Recommended Preferred Scheme Option F: Two Points of Access & Additional Off Street Parking within the Sports Centre

5.8.1 Option F Design Summary

Option F seeks to develop further on Option C while also seeking to address the shortage of parking spaces currently witnessed during the busier periods of the Sports Centre. As with Option C, a secondary access would be formed from Bridgend Road to the south of the existing Sports Centre junction. In conjunction with the secondary access, the in-curtilage parking provision would be increased by way of extending the rear car park to the south and maximising the number of parking spaces that could feasibly be created within the boundary of the existing Sports Centre car park.

IC have also requested that consideration is given to relocating the East End United Football Club changing rooms, and what benefit this could achieve in terms of parking provision.

On site observations suggest that, during the peak periods of activity, there is a demand for approximately 100 parking spaces within the Sports Centre (see Section 3.7.4 and 3.7.5). At present, and including the parking area to the rear, there are approximately 50 parking spaces available within the curtilage of the Sports Centre, equating to a (minimum) shortfall of 50 spaces. This shortfall is currently accommodated through a combination of overcrowding of the rear car park, cars parking along the internal roads (therefore creating pinch points and restricting traffic movements), parking in non-designated areas within the front car park and on-street parking along the eastern footway of Bridgend Road.

An indicative layout for Option F is shown in Figure 5.7 and as a full A4 page in Appendix A. As demonstrated, and with retaining the East End United Football Club change room at its current location, it would be possible to provide 109 parking spaces within an extended curtilage of the Sports Centre.

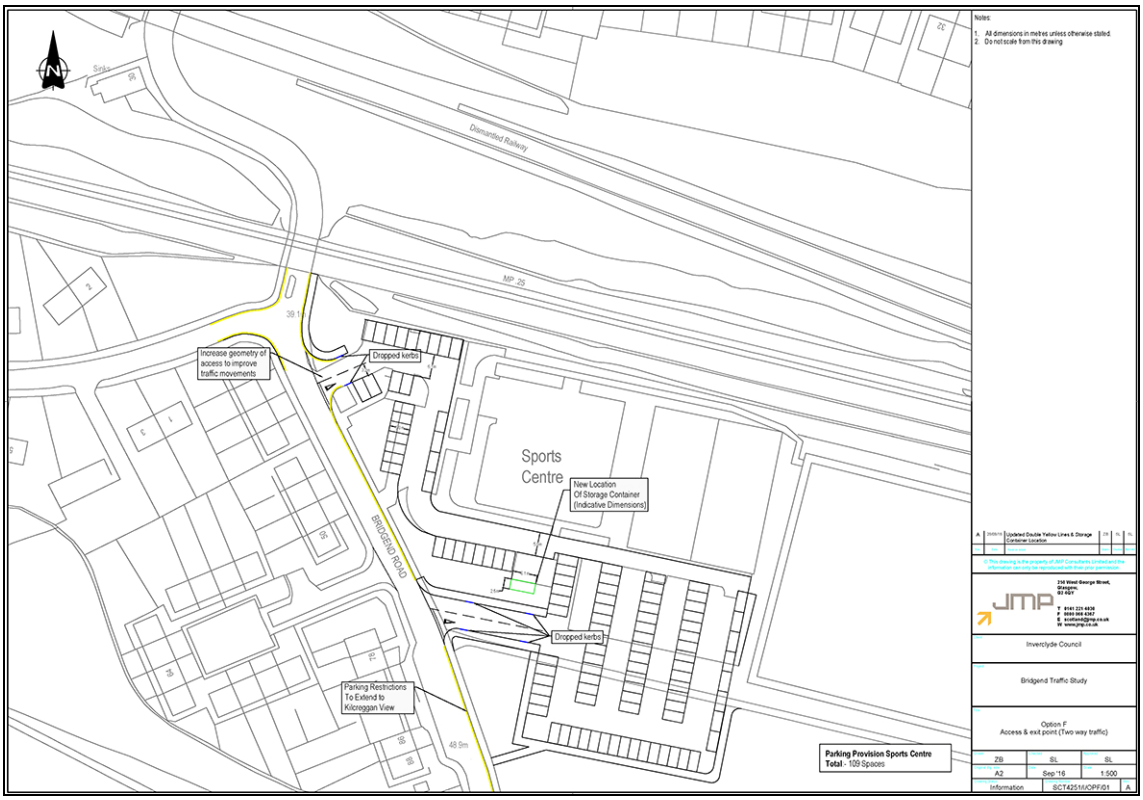


Figure 5.7 : Option F: Two-Way Operation at Existing and New Junction plus Additional Parking off-street within the Sports Centre

Option E (the implementation of TROs along Bridgend Road and at its corner with Castle Road) could also be incorporated within Option F.

5.8.2 Option F: Strengths

Two points of access from Bridgend Road would reduce the level of activity and potential conflicts currently taking place at the existing access (see Sections 4.4.4 and 4.4.5).

The indicative layout demonstrates that by extending the limits of the rear car park and creating additional parking within the existing car park, it would be possible to create a total of 109 parking spaces. It should be noted that this option retains the East End United Football Club's changing rooms in their current location.

Providing perpendicular parking spaces along the southern boundary of the internal roads should discourage drivers from parking on the access road, as they would prevent other drivers already parked in the bays from exiting these spaces.

Relocating the changing rooms would provide an opportunity to create a further four spaces on its current location. While the overall costs to relocate the changing room are unknown at this time (demolition of existing building, sever/terminate existing utility connections, construction of a new building, new utility connections), the 'cost to benefit' relationship may not justify relocating the changing rooms.

The introduction of a TRO at the Bridgend Road/Castle Road junction would free up road space which should help ease the effects of any congestion in that area at peak times. The proposed TRO on the east side of Bridgend Road would discourage drivers from parking on the footway.

5.8.3 Option F: Weaknesses

While extending the car park, and creating additional parking spaces within the existing car park, will address the shortfall of parking spaces currently experienced at the Sports Centre, the location of the new car park would be remote to the Sport Centre's entrance. This relationship between the car park and entrance may discourage the effective use of the new car park, potentially resulting in some visitors continuing to park on the Bridgend Road footways, or at inappropriate locations within the existing car park.

As previously discussed, a TRO would be required to deter drivers from parking on the footway along the east side of Bridgend Road. The challenges of successfully implementing and enforcing a TRO have been discussed in the detail but would include the need for a statutory legal period of consultation and consistent enforcement by Parking Attendants.

The topography (i.e. gradient) of the area to the south of the rear car park is relatively steep and so extending the car park could potentially require a significant amount of excavation. Furthermore, the gradient may require some form of retention (e.g. a retaining wall or possibly gabion baskets) along the southern boundary of the extended car park to support the slope. It may be possible to address this gradient by re-grading the land to the south, but topographical survey work would be required to better understand the ground levels and existing gradient. It may also be prudent to undertake a soil investigation study to confirm soil conditions and the geotechnical properties (e.g. soil composition, stability and mechanics).

Extending the car park will also affect the drainage characteristics of this area, as a result of excavating the ground to the south and replacing it with a hard standing area (i.e. the car park). As part of any further survey works, it may be prudent to undertake a drainage impact assessment in order to fully understand the drainage requirements and with that, if there is a need to provide some form of sustainable urban drainage system.

5.8.4 Option F: Indicative Costs

Indicative costs to be confirmed but will to take into consideration:

- Constructing new access: £15,000
- Lining: £650
- Drainage: £18,000
- Utilities:
  Gas, electricity, BT, and water utilities will all potentially be affected by this option. We would suggest a notional £20,000 per utilities = £80,000
- Excavation for extended car park: £4,500
- Construction of new car park: £6,000
- Lighting: £10,000
- Ground Retention: Notional £25,000
- Construction traffic management such warning signs, safe working areas, and potentially stop/go boards to control the flow of traffic should construction reduce Bridgend Road to one lane (to maintain a safe working environment). Traffic management costs are typically £1,000 to set up plus £1,000 to take down, and approximately £500 per day thereafter.

Not including traffic management, we would estimate the cost for Option F to be £159,150.

There would also be the cost of implementing any TROs should they be taken forward.

6 TRAVEL PLANNING MEASURES

The findings of this study have shown that currently the demand for parking outweighs the existing supply. Although it has been identified that more spaces can be provided, and the circulation within the site could be improved, these issues would not, in themselves, address the demand for parking spaces at the Sports Centre.

An engineering based solution could be complemented with demand management initiatives that could include:

- Encouraging car share amongst players at East End United Football Club to increase the number of children per car. This is something the club could encourage and introduce on an informal basis, e.g. friends and team mates travelling together.
- Stagger the start and end times of their sessions, e.g. Session 1 ends 18:30 hours, Session 2 starts 18:40 hours in an attempt to dilute the effect of drop off/pick up trips.
- The Sports Centre could review their timetable, e.g. 5-a-side football times staggered with East End United Football Club training and other activities at the sports centre to dilute the effect at change over times.

These types of initiatives would act to reduce the number of car trips, and so lead to an improvement in conditions within the study area.

IC could initiate discussions between all parties to encourage changes in the operation of the Sports Centre and East End United Football Club to the benefit of all users.

7 SUMMARY AND CONCLUSION

7.1 Summary

IC provided a list of concerns that have been raised with elected members regarding the operation of Bridgend Road in conjunction with the Sports Centre; these are set out as follows:

- The S-bend on Bridgend Road between the two railway bridges cause congestion, particularly at the south end.
- The entrance to the Sports Centre is too close to the traffic calming feature.
- Cars park on both sides of Bridgend Road near the Sports Centre.
- Tuesdays at approximately 18:00 are the most congested. East End United Football Club has training sessions at this time and as one session ends, another begins so there is an overlap with parents dropping off and picking up. Fitness classes also start and end at the same time and so there is lots of activity in and around the Sports Centre.

From various site visits and talking to locals, there was also a perception that traffic speeds could be high at certain times of the day and that there were accidents and 'near misses' on and around the S-bend.

The data collection exercise was therefore intended to understand how the road network operated at various times of the day.

7.2 Data Collection Exercise

A comprehensive data collection exercise was undertaken in order to gain an understanding of the existing conditions in the study area. A series of surveys were undertaken in June and August 2016 of pedestrian activity, traffic volume and speed, and parking accumulation.

IC also provided information relating to road accidents (includes non-injury accidents) and Utilities.

IC commissioned the following surveys:

- Pedestrian counts: Monday 14 June 2016
- Automatic Traffic Counts (ATCs): Saturday 11 to Friday 17 June 2016
- Parking accumulation: Saturday 11, Thursday 16, Friday 17 June, and Tuesday 23 August 2016
- Classified turning counts: Tuesday 23 August 2016

Site visits were undertaken as follows:

- AM peak: Wednesday 22 June 2016
- PM peak: Tuesday 28 June 2016
- Evening peak: Tuesday 23 August 2016

7.3 Development of Options & Conclusion

Based on a site visit on 28 July and initial discussions with Inverclyde Council, five potential options were developed for consideration (Options A, B, C, D and E). The strengths and weaknesses for each option have been identified and discussed in detail in Section 5.

Taking cognisance of consultation with Inverclyde Council, a sixth option (Option F) has since been developed.

Option F seeks to address the activity currently taking place at the existing access and also the shortfall in parking spaces. This is achieved by creating a second access to the sports centre and extending the area of the rear car park. This would provide a total of 109 in curtilage parking spaces.

This option would reduce the vehicular activity currently taking place at the existing access and the interaction with Castle Road and the railway bridge. The implementation of on-street parking restrictions would address the parking that currently takes place along the footway on the east side of Bridgend Road and at its corner with Castle Road.

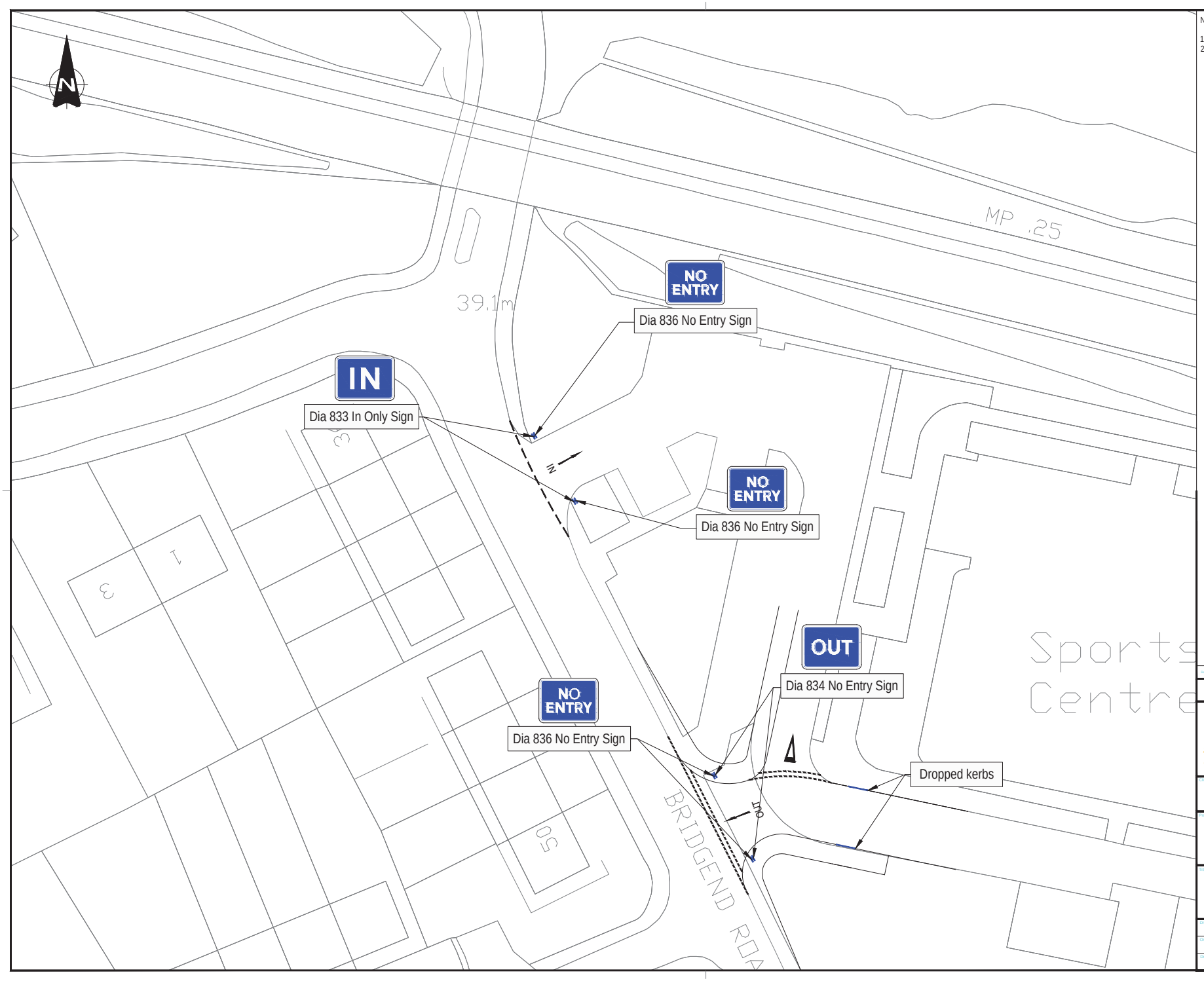
The cost to implement Option F would be approximately £160,000, plus traffic management costs that would depend on the duration of the works.

If the cost for Option F is prohibitive, Option C could be progressed as this will improve the operation of the access junction and could improve conditions on Bridgend Road at the 'bottleneck'.

Should IC wish to progress with the final recommended Option F, it is recommend that a number of additional studies are carried out to determine the soil mechanics of the land to the south and also any additional drainage requirements.

Travelling planning measures should also be investigated to try to dilute the effect of the numerous activities taking place at the Sports Centre.

A A4 DRAWINGS



Notes:

1. All dimensions in metres unless otherwise stated.
2. Do not scale from this drawing

Rev	Date	Revision details	Drawn	Checked	Approved

Mercantile Chambers,
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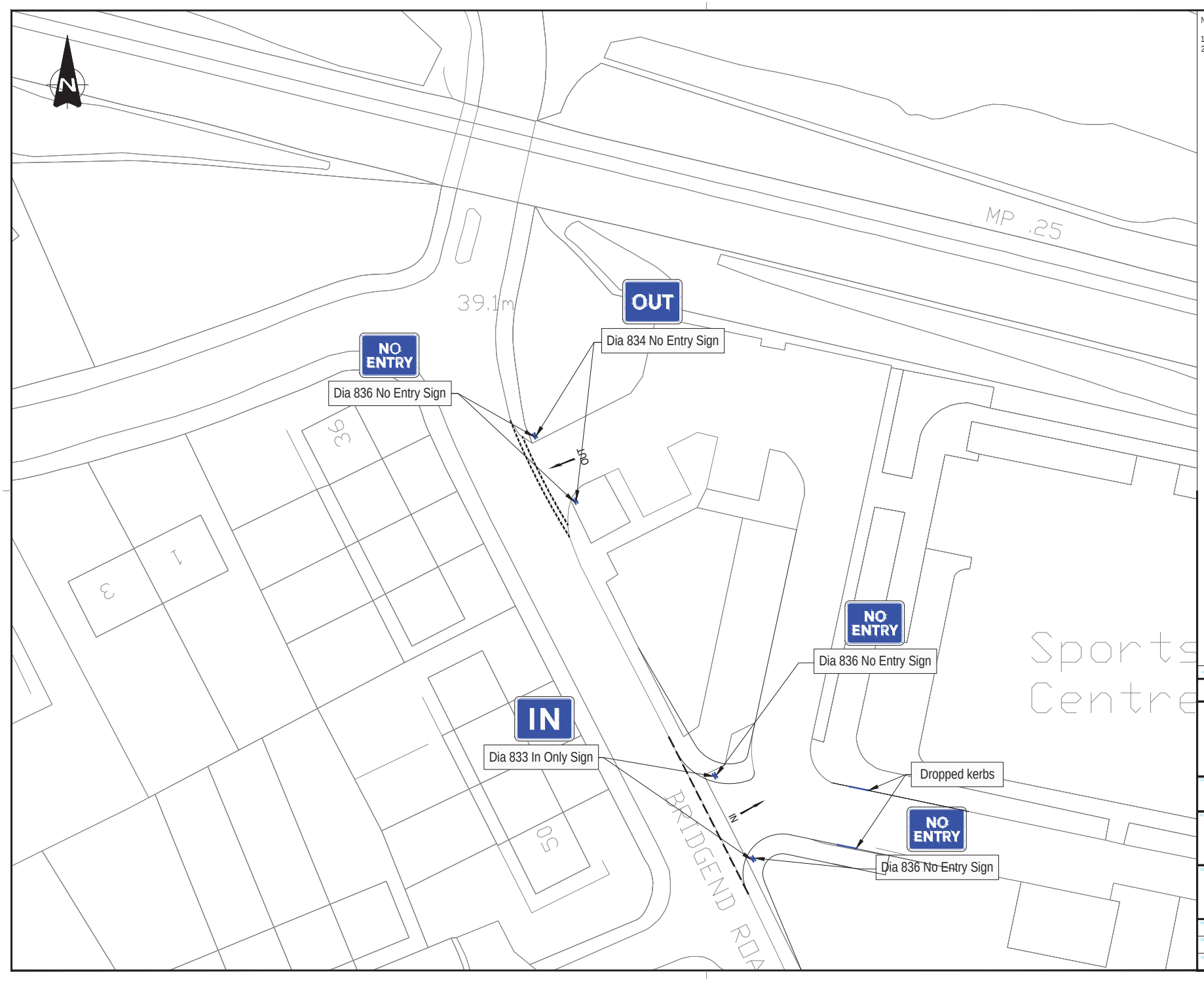
Client: Inverclyde Council

Project: Bridgend Traffic Study

Title: Option A
One way in / out system

Drawn	Checked	Approved
DC	SL	SL
Original drg. size: A2	Date: JUL '16	Scale: 1:250
Drawing Status: Information	Drawing Number: SCT4251/I/OPA/01	Rev: -



Notes:

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2. Do not scale from this drawing

Rev.	Date	Revision details	Drawn	Checked	Approved

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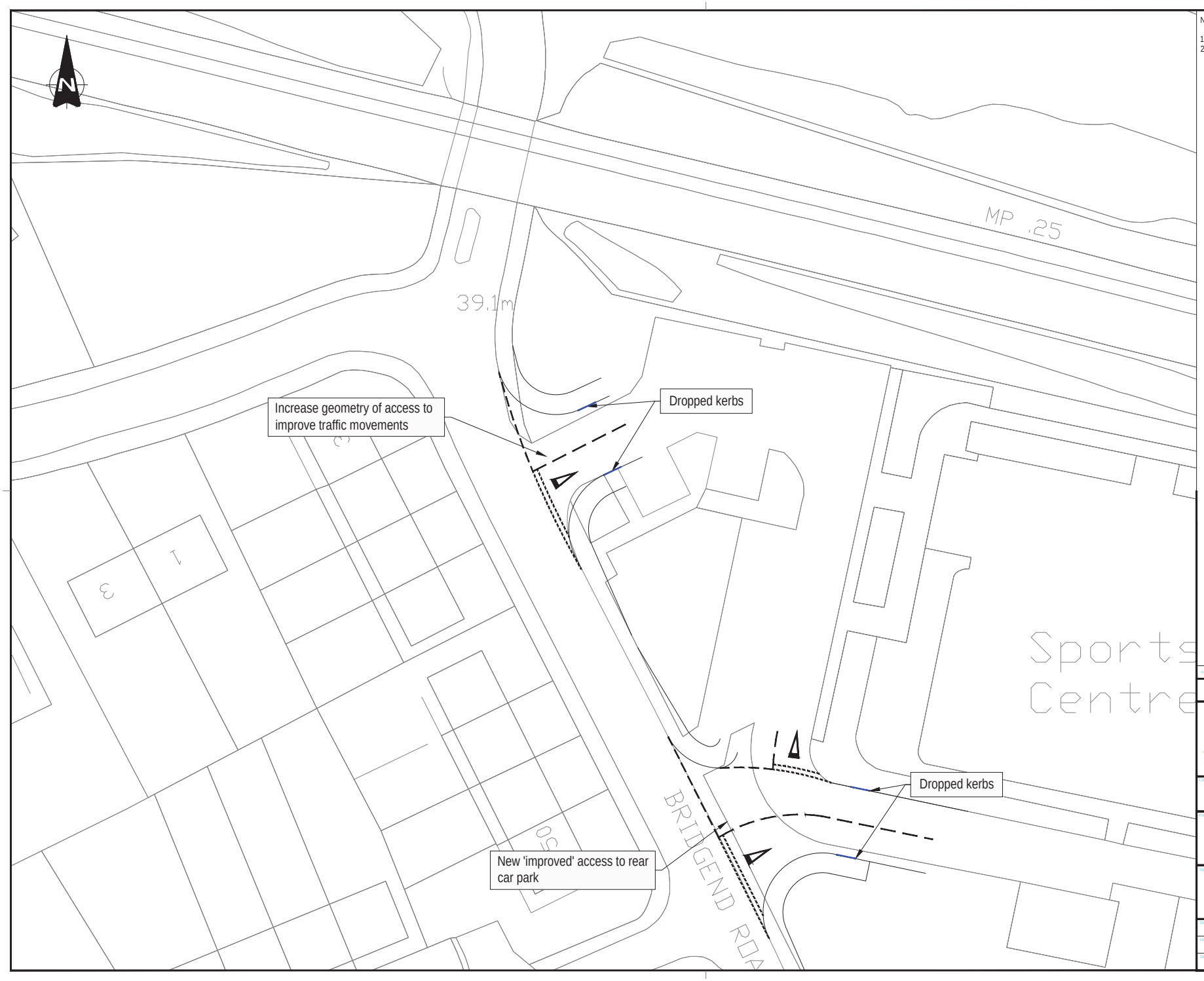
Client: Inverclyde Council

Project: Bridgend Traffic Study

Title: Option B
One way in / out system

Drawn	Checked	Approved
DC	SL	SL
Original drg. size	Date	Scale
A2	JUL '16	1:250
Drawing Status	Drawing Number	Rev.
Information	SCT4251/I/OPB/01	-



Notes:

1. All dimensions in metres unless otherwise stated.
2. Do not scale from this drawing

Rev.	Date	Revision details	Drawn	Checked	Approved

JMP
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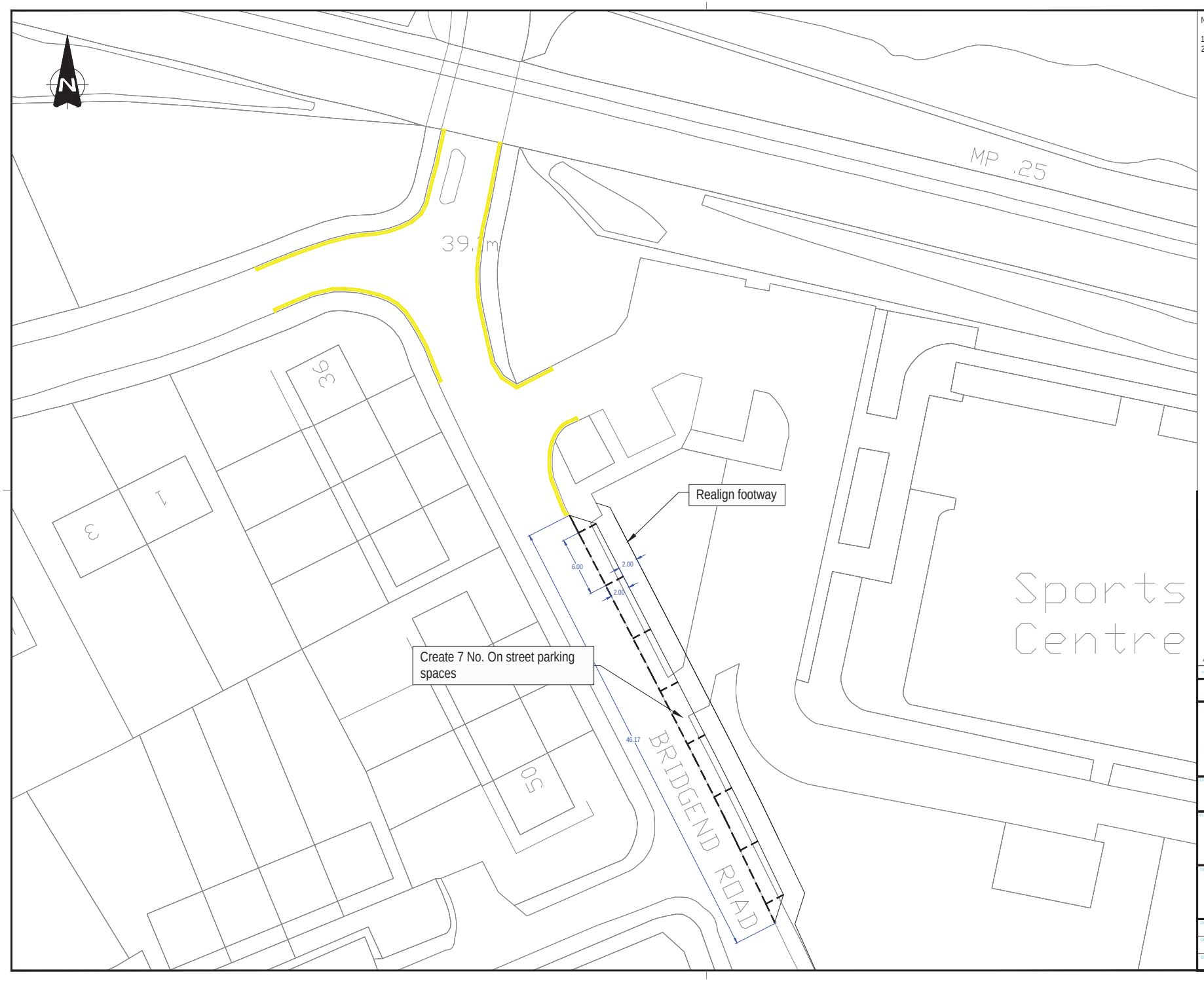
Client: Inverclyde Council

Project: Bridgend Traffic Study

Title: Option C
Access & exit point (Two way traffic)

Drawn	Checked	Approved
DC	SL	SL
Original drg. size: A2	Date: JUL '16	Scale: 1:250
Drawing Status: Information	Drawing Number: SCT4251//OPC/01	Rev. -



Notes:

1. All dimensions in metres unless otherwise stated.
2. Do not scale from this drawing

Rev.	Date	Revision details	Drawn	Checked	Approved
A	29/09/16	Updated Double Yellow Lines	ZB	SL	SL

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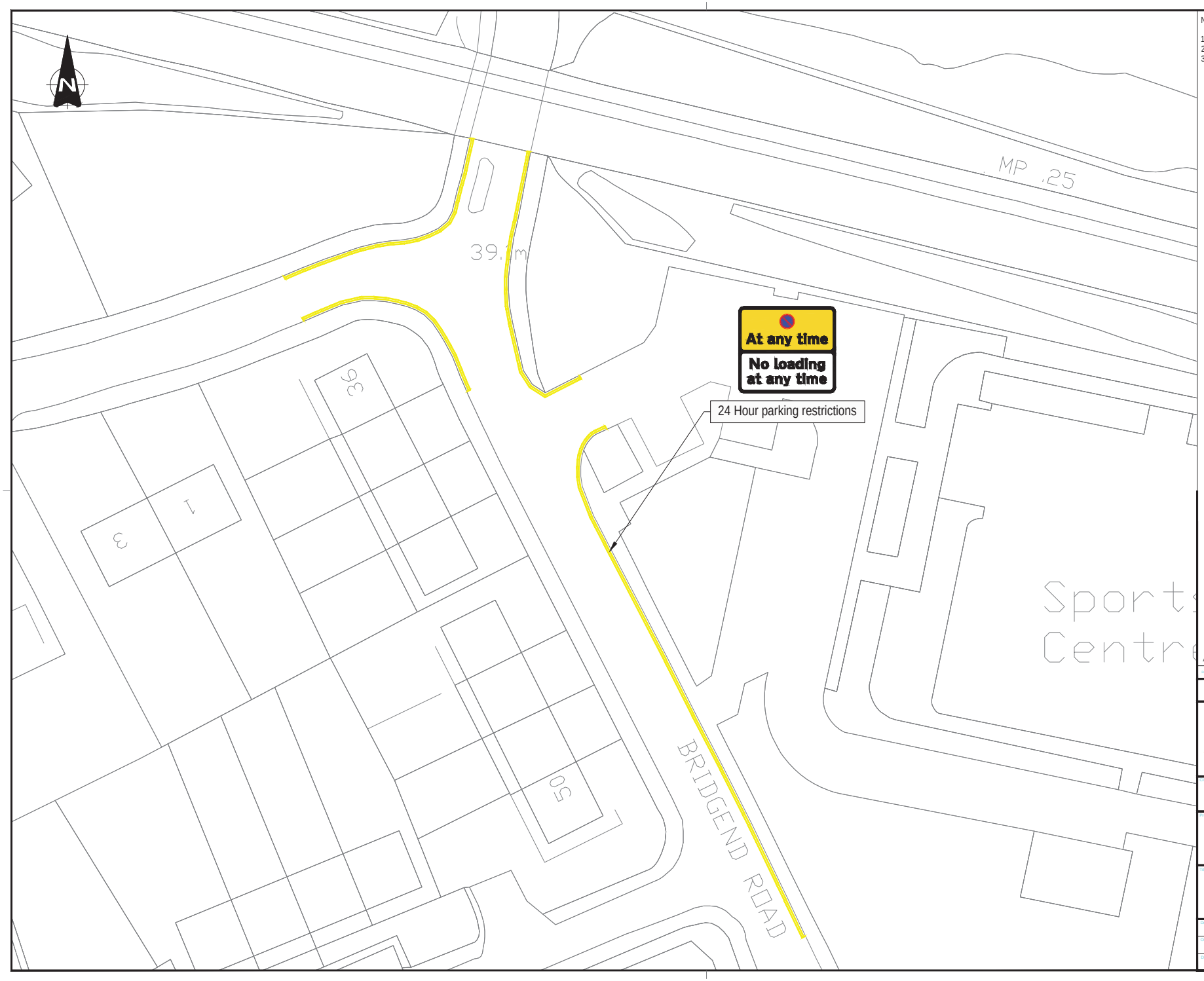
Client: Inverclyde Council

Project: Bridgend Traffic Study

Title: Option D
Provide 7 parking bays

Drawn	Checked	Approved
ZB	SL	SL
Original drg. size	Date	Scale
A2	Sep '16	1:250
Drawing Status	Drawing Number	Rev.
Information	SCT4251/I/OPD/01	A



Notes:

1. All dimensions in metres unless otherwise stated.
2. Do not scale from this drawing
3. The parking restriction could be introduced as a 'Temporary Traffic Regulation Order' (TTRO) to gauge effectiveness & public opinions. TTRO can run for 18 months, followed by another 18 months if required. Thereafter, the TRO could be made permanent (subject to the appropriate statutory procedure) or withdrawn if deemed to be unsuccessful.

Rev.	Date	Revision details	Drawn	Checked	Approved
A	29/09/16	Updated Double Yellow Lines	ZB	SL	SL

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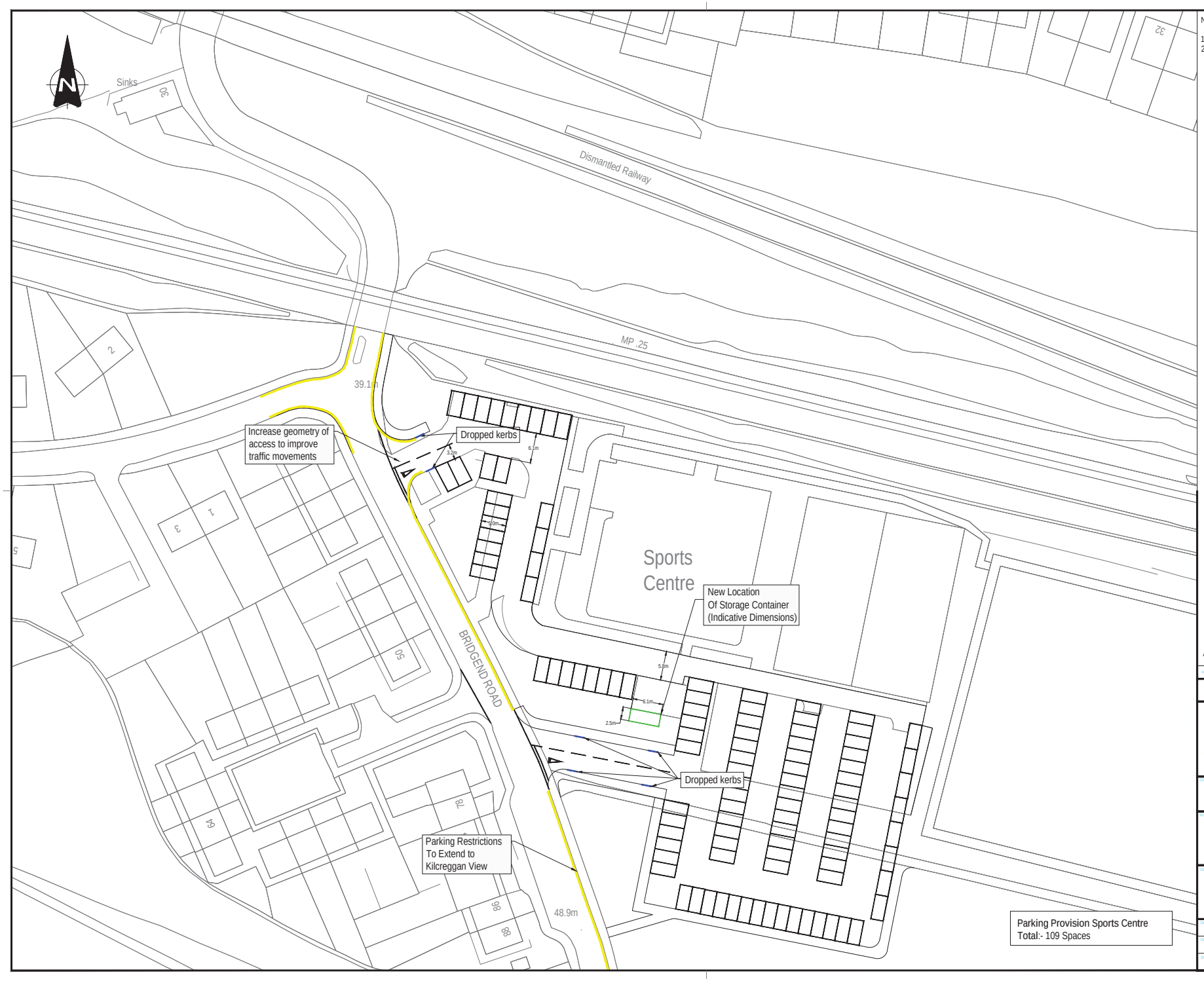
Client: Inverclyde Council

Project: Bridgend Traffic Study

Title: Option E
Double yellow lines

Drawn	Checked	Approved
ZB	SL	SL
Original drg. size	Date	Scale
A2	Sep '16	1:250
Drawing Status	Drawing Number	Rev.
Information	SCT4251/I/OPE/01	A



Notes:

1. All dimensions in metres unless otherwise stated.
2. Do not scale from this drawing

Rev.	Date	Revision details	Drawn	Checked	Approved
A	29/09/16	Updated Double Yellow Lines & Storage Container Location	ZB	SL	SL

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Client: Inverclyde Council

Project: Bridgend Traffic Study

Title: Option F
Access & exit point (Two way traffic)

Drawn	Checked	Approved
ZB	SL	SL
Original drg. size	Date	Scale
A2	Sep '16	1:500
Drawing Status	Drawing Number	Rev.
Information	SCT4251/I/OPF/01	A