

A127 The Bell Junction Improvement- Options Appraisal

A127 The Bell Junction Improvement Options Appraisal

1. Introduction

The purpose of this Technical Note is to establish the available options relating to the highway improvements at the A127 The Bell.

2. Option 1

This options provides an extension to the existing A127 eastbound right turn lane and removes the removal of the A127 westbound right turn facility, enabling a widened pedestrian crossing island.

Extending the A127 eastbound right lane will reduce traffic spilling into lane 2 which effectively reduces the capacity of the junction down to a single lane for vehicles traveling through the junction.

Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

This option is contained within the highway boundary.

For details of the option refer to Appendix 1.

2.1. Benefits:

2.1.1. Widened Pedestrian Crossing Island on the eastern arm of the junction.

2.1.2. Extended A127 eastbound right turn lane to prevent right turn traffic blocking lane 2.

2.2. Constraints:

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network and will impact on adjacent junctions.

2.3. Traffic effect

- 2 ahead lanes A127 Eastbound
- 2 ahead lanes A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- All directions accessible via junction
- Dedicated A127 Eastbound right turn lane extended
- A127 Westbound right turn lane removed

3. Option 2

This option proposes a dedicated left turn slip lane on the A127 into Rochford Road, and an extension to the existing A127 eastbound right turn lane. The A127 westbound right turn lane is also removed in this option, enabling a widened pedestrian crossing island.

Provision of a dedicated left turn lane into Rochford Road will reduce the impact of left turning vehicles at the junction. There is a tendency in the existing layout for vehicles, especially HGV's, entering lane 2 to make the left turn manoeuvre which reduces the performance of the junction as it limits the number of vehicles traveling through the junction.

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Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

A new pedestrian crossing facility is also provided on Rochford Road creating a safer crossing place where there is currently none.

The use of land outside of the highway boundary, to the north west of the junction, is required for this option. This land is currently designated as public open space.

For details of the option refer to Appendix 1.

3.1. Benefits:

- 3.1.1. New pedestrian crossing location on Rochford Road providing a safer means to cross where there presently is none.
- 3.1.2. Extended A127 eastbound right turn lane to prevent right turn traffic blocking lane 2.
- 3.1.3. New A127 left slip lane into Rochford Road to reduce the impact of left turning traffic on the junction.

3.2. Constraints:

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network and will impact on adjacent junctions.
- Transfer of public open space to the north west of the junction will be required.

3.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 2 ahead lanes A127 Westbound,
- Single lane ahead Northbound & single lane ahead Southbound
- Dedicated A127 Eastbound right turn lane extended
- A127 Westbound right turn lane removed
- Additional dedicated A127 Eastbound left turn lane

4. Option 3

This option proposes a dedicated left turn slip lane on the A127 into Rochford Road, and an extension to the existing A127 eastbound right turn lane. The A127 westbound right turn lane is also removed in this option, enabling a widened pedestrian crossing island.

Provision of a dedicated left turn lane into Rochford Road will reduce the impact of left turning vehicles at the junction. There is a tendency in the existing layout for vehicles, especially HGV's, entering lane 2 to make the left turn manoeuvre which reduces the performance of the junction as it limits the number of vehicles traveling through the junction.

Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

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A new pedestrian crossing facility is also provided on Rochford Road and Hobleythick Lane, creating a safer crossing place where there is currently none.

The use of land outside of the highway boundary, to the north west of the junction, is required for this option. This land is currently designated as public open space.

For details of the option refer to Appendix 1.

4.1. Benefits:

- 4.1.1. New pedestrian crossing location on Rochford Road and Hobleythick Lane providing a safer means to cross where there presently is none.
- 4.1.2. Extended A127 eastbound right turn lane to prevent right turn traffic blocking lane 2.
- 4.1.3. New A127 left slip lane into Rochford Road to reduce the impact of left turning traffic on the junction.

4.2. Constraints:

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network and will impact on adjacent junctions.
- Transfer of public open space to the north west of the junction will be required.

4.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 2 ahead lanes A127 Westbound,
- Single lane ahead Northbound & single lane ahead Southbound
- Dedicated A127 Eastbound right turn lane extended
- A127 Westbound right turn lane removed
- Additional dedicated A127 Eastbound left turn lane
- Southern arm pedestrian crossing facilities improved

5. Option 4

This option proposes an additional dedicated lane on Rochford Road and an additional westbound ahead lane on the A127.

The additional lane on the A127 westbound carriageway and Rochford Road will improve the performance of the junction by allowing additional vehicles to pass through it.

Signalised pedestrian crossing are introduced to Hobleythick Lane and Rochford Road. These new crossings locations will be a benefit to pedestrians creating safe crossing places where there are currently none. The crossing on Hobleythick Lane has a pedestrian refuge island, which will allow the two stages of the crossing to operate independently reducing the impact on the junction performance.

The use of third party land will be required for widening of the carriageway.

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For details of the option refer to Appendix 1.

5.1. Benefits:

- 5.1.1. A127 westbound traffic flows will be improved with an additional ahead lane.
- 5.1.2. Southbound traffic movement from Rochford Road will be improved with an additional left turn lane.
- 5.1.3. New pedestrian crossing facilities on Rochford Road and Hobleythick Lane providing a safer means of crossing east-west at the junction.

5.2. Constraints:

- Land outside the highway boundary will be required.

5.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 3 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- Additional dedicated left turn lane southbound
- Additional A127 Westbound Exit lane

6. Option 5

This option proposes an additional dedicated lane on Rochford Road and an additional westbound ahead lane on the A127 as well as extending the eastbound right turn lane.

The additional lane on the A127 westbound carriageway and Rochford Road will improve the performance of the junction by allowing additional vehicles to pass through it.

Extending the A127 eastbound right lane will reduce traffic spilling into lane 2 which effectively reduces the capacity of the junction down to a single lane for vehicles traveling through the junction.

Signalised pedestrian crossing are introduced to Hobleythick Lane and Rochford Road. These new crossings locations will be a benefit to pedestrians creating safe crossing places where there are currently none. The crossing on Hobleythick Lane has a pedestrian refuge island, which will allow the two stages of the crossing to operate independently reducing the impact on the junction performance.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

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6.1. Benefits:

- 6.1.1. A127 westbound traffic flows will be improved with an additional ahead lane.
- 6.1.2. Southbound traffic movement from Rochford Road will be improved with an additional left turn lane.
- 6.1.3. New pedestrian crossing facilities on Rochford Road and Hobleythick Lane providing a safer means of crossing east-west at the junction.
- 6.1.4. Extended A127 eastbound right turn lane to prevent right turn traffic blocking lane 2.

6.2. Constraints:

- Land outside the highway boundary will be required.

6.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 3 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- Dedicated A127 Eastbound right turn lane extended
- Additional dedicated left turn lane southbound
- Additional A127 Westbound Exit lane

7. Option 6

This option proposes an additional dedicated lane on Rochford Road and an additional westbound ahead lane on the A127 as well as extending the eastbound right turn lane and removes the removal of the A127 westbound right turn facility, enabling a widened pedestrian crossing island.

The additional lane on the A127 westbound carriageway and Rochford Road will improve the performance of the junction by allowing additional vehicles to pass through it.

Extending the A127 eastbound right lane will reduce traffic spilling into lane 2 which effectively reduces the capacity of the junction down to a single lane for vehicles traveling through the junction.

Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

Signalised pedestrian crossing are introduced to Hobleythick Lane and Rochford Road. These new crossings locations will be a benefit to pedestrians creating safe crossing places where there are currently none. The crossing on Hobleythick Lane has a pedestrian refuge island, which will allow the two stages of the crossing to operate independently reducing the impact on the junction performance.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

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7.1. Benefits:

- 7.1.1. A127 westbound traffic flows will be improved with an additional ahead lane.
- 7.1.2. Southbound traffic movement from Rochford Road will be improved with an additional left turn lane.
- 7.1.3. New pedestrian crossing facilities on Rochford Road and Hobleythick Lane providing a safer means of crossing east-west at the junction.
- 7.1.4. Extended A127 eastbound right turn lane to prevent right turn traffic blocking lane 2.
- 7.1.5. Widened Pedestrian Crossing Island on the eastern arm of the junction.

7.2. Constraints:

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network and will impact on adjacent junctions.
- Land outside the highway boundary will be required.

7.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 3 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- A127 Eastbound right turn lane extended
- A127 Westbound right turn lane removed
- Additional dedicated left turn lane southbound
- Additional A127 Westbound Exit lane

8. Option 7

This option proposes a dedicated left turn lane on the A127 into Rochford Road, and an additional dedicated lane on Rochford Road. The A127 westbound right turn lane is also removed in this option, enabling a widened pedestrian crossing island.

Provision of a dedicated left turn lane into Rochford Road will reduce the impact of left turning vehicles at the junction. There is a tendency in the existing layout for vehicles, especially HGV's, entering lane 2 to make the left turn manoeuvre which reduces the performance of the junction as it limits the number of vehicles traveling through the junction.

The additional lane on the A127 westbound carriageway and Rochford Road will improve the performance of the junction by allowing additional vehicles to pass through it.

Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

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8.1. Benefits:

- 8.1.1. Southbound traffic movement from Rochford Road will be improved with an additional left turn lane.
- 8.1.2. New A127 left turn lane into Rochford Road to reduce the impact of left turning traffic on the junction.
- 8.1.3. Widened Pedestrian Crossing Island on the eastern arm of the junction.

8.2. Constraints:

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network and will impact on adjacent junctions.
- Land outside the highway boundary will be required.

8.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 2 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- Additional dedicated A127 Eastbound left turn lane

9. Option 8

This option proposed the removal of the A127 eastbound right turn facility and install a left dedicated left turn lane into Rochford Road. The A127 westbound right turn facility is also removed to install an additional westbound lane, which merges beyond the junction.

The removal of the right turn facilities on the A127 will improve junction performance allowing the green time to be distributed around the junction. However this will have a detrimental impact on traffic traveling to the hospital as this is the principal route for this destination.

There are no changes in the pedestrian crossings at the junction in this proposal.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

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9.1. Benefits:

- 9.1.1. Removal of the A127 right turn facilities will improve the performance of the junction.
- 9.1.2. New A127 left turn lane into Rochford Road to reduce the impact of left turning traffic on the junction.
- 9.1.3. An additional westbound lane will allow greater numbers of vehicles to travel through the junction.

9.2. Constraints

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network and will impact on adjacent junctions.
- Land outside the highway boundary will be required.

9.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 3 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- A127 Westbound right turn lane removed
- A127 Eastbound right turn lane removed
- Additional A127 Westbound Exit lane
- Additional dedicated A127 Eastbound left turn lane

10. Option 9

This option proposes a dedicated left turn slip lane on the A127 into Rochford Road, the A127 westbound right turn facility is also removed to install a dedicated left turn facility into Hobleythick Lane.

Provision of a dedicated left turn lane into Rochford Road will reduce the impact of left turning vehicles at the junction. There is a tendency in the existing layout for vehicles, especially HGV's, entering lane 2 to make the left turn manoeuvre which reduces the performance of the junction as it limits the number of vehicles traveling through the junction.

Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

Provision of a dedicated left turn lane into Hobleythick Lane will reduce the impact of left turning vehicles at the junction. This benefits the traffic passing through the junction, but would be undermined by vehicles queuing to turn right in lane 2.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

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10.1. Benefits

- 10.1.1. New A127 left turn lane into Rochford Road to reduce the impact of left turning traffic on the junction.
- 10.1.2. New A127 left turn lane into Hobleythick Lane to reduce the impact of left turning traffic on the junction.
- 10.1.3. Improved pedestrian facilities at the junction.

10.2. Constraints

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network or will block straight ahead traffic whilst they wait to queue and will impact on adjacent junctions.
- Land outside the highway boundary will be required.

10.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 2 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- A127 Eastbound right turn lane extended
- Additional dedicated A127 Westbound left turn lane
- Additional dedicated A127 Eastbound left turn lane

11. Option 10

This option proposes a dedicated left turn slip lane on the A127 into Rochford Road, the A127 westbound right turn facility is also removed, and a dedicated left turn facility from Hobleythick Lane onto the A127.

Provision of a dedicated left turn lane into Rochford Road will reduce the impact of left turning vehicles at the junction. There is a tendency in the existing layout for vehicles, especially HGV's, entering lane 2 to make the left turn manoeuvre which reduces the performance of the junction as it limits the number of vehicles traveling through the junction.

The provision of a left turn lane that is able to flow freely onto the A127 will reduce the queuing experienced on Hobleythick Lane, but will reduce the performance of the A127 heading westbound by forcing them to merge beyond the junction.

Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

Signalised pedestrian crossing are introduced to Hobleythick Lane and Rochford Road. These new crossings locations will be a benefit to pedestrians creating safe crossing places where there are currently none. The crossing on Hobleythick Lane has a pedestrian refuge island, which will allow the two stages of the crossing to operate independently reducing the impact on the junction performance.

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The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

11.1. Benefits

- 11.1.1. New A127 left turn lane into Rochford Road to reduce the impact of left turning traffic on the junction.
- 11.1.2. New left turn lane from Hobleythick Lane will reduce queuing.
- 11.1.3. Improved pedestrian facilities at the junction.

11.2. Constraints

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network or will block straight ahead traffic whilst they wait to queue and will impact on adjacent junctions.
- The left turn lane from Hobleythick Lane will impact the performance of the A127.
- Land outside the highway boundary will be required.

11.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 3 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- Additional dedicated A127 Eastbound left turn lane
- Dedicated Northbound left turn lane
- Additional A127 Westbound Exit lane

12. Option 11

This option propose to replace the existing signalling junction with a roundabout to the west. Access to and from both Hobleythick Lane and Rochford Road from the A127 can be made via a left turn in and out of the junction. Direct access from Hobleythick Lane to Rochford Road is removed in this option.

Vehicle access to Hobleythick Lane from Rochford Road will instead be possible via alternative routes on the surrounding road network, though this will cause an increase of traffic and potential delays on key neighbouring junction such as the Cuckoo Corner junction, which provides a direct link to Southend Airport and the Town centre. Access to Rochford Road from Hobleythick Lane can be made via the new roundabout, though this would be a significant increase in journey times for northbound traffic.

This option incorporates a crossing point only on the eastern side of the junction. Traffic flows on the A127 eastbound and westbound carriageways will be held when the crossing is in use. Removal of the crossing on all other parts of the junction will require pedestrians to seek alternative safe places to cross.

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The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

12.1. Benefits

12.1.1. U-turn facility available at the roundabout

12.1.2. A127 traffic will have an improved flow east/west from the removal of the signals.

12.2. Constraints

- Removal of the A127 eastbound right turn movement into Hobleythick Lane.
- Land outside the highway boundary will be required.
- Major disruption during the construction phase alternative routes and diversions will be required.
- Estimated cost would be significantly over budget.
- Pedestrian crossing facilities removed on the A127 western arm and both Hobleythick Lane and Rochford Road.
- North/south route will be adversely affected.

12.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 2 lanes ahead A127 Westbound
- Northbound left turn only access onto A127 Westbound
- Southbound left turn only access onto A127 Eastbound
- A127 Eastbound right turn lane removed
- Southbound ahead lane removed
- A127 Westbound right turn lane removed
- Northbound ahead to Rochford Road only via new roundabout
- Prince Avenue Service Road access Eastbound carriageway via new roundabout

13. Option 12

This option proposes a dedicated left turn slip for the A127 eastbound traffic into Rochford Road. This option also proposes to replace the signalised junction for a priority junction with shortened right turn lanes for vehicles crossing the A127 to access both Rochford Road and Hobleythick Lane.

This option priorities the A127 eastbound and westbound ahead movement and requires those accessing Rochford Road and Hobleythick Lane to wait for a suitable gap in traffic. It is expected that this option would cause significant queues for turning movements and extended journey times for vehicles moving to and from Rochford Road and Hobleythick Lane.

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Signalised pedestrian crossings are provided on the A127 to the east and west of the junction and on Rochford Road. When the pedestrian crossings are in use this will hold traffic on the A127.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

13.1. Benefit

13.1.1. Dedicated A127 Eastbound left turn lane.

13.1.2. Unrestricted movement at the junction.

13.2. Constraint

- Estimated costs would be significantly more than the proposed £5M budget.
- Land outside the highway boundary will be required.
- Vehicles turning movements within the junction are likely to cause long queues and increase journey times.
- Pedestrian crossing locations are located further away from their existing locations requiring pedestrians to travel a greater distance.

13.3. Traffic effect –

- 2 lanes ahead A127 Eastbound
- 2 lanes ahead A127 Westbound
- Northbound left turn only access onto A127 Westbound
- Southbound left turn only access onto A127 Eastbound
- Additional dedicated A127 Eastbound left turn lane
- Northbound ahead to Rochford Road only via new staggered junction

14. Option 13

This option proposes to remove the A127 westbound dedicated right turn facility to Rochford Road, to provide a third lane on the eastern arm for eastbound traffic. The A127 eastbound right turn lane is reduced in length to incorporate three ahead lanes on approach to the junction.

The removal of the dedicated right turn lane on the A127 westbound carriageway will slow traffic moving through the junction as they will be forced to wait behind those vehicles turning right in Rochford Road.

Existing pedestrian crossing facilities are maintained at the junction with new crossings on both Hobleythick Lane and Rochford Road.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

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14.1. Benefit

- 14.1.1. Estimated costs are expected to be less than the proposed £5M budget.
- 14.1.2. A127 Eastern arm pedestrian crossing facilities improved.
- 14.1.3. New pedestrian crossing facilities provided across the A127 carriageway.
- 14.1.4. Additional lane heading eastbound.

14.2. Constraints

- Land outside the highway boundary will be required.
- Removal of the existing dedicated right and left turn facilities will undermine the performance of the junction.

14.3. Traffic effect

- 3 lanes ahead A127 Eastbound
- 2 lanes ahead A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound

15. Option 14

This option proposes an east/west underpass on the A127. The underpass will have a positive impact on the junction and will improve journey times for traffic on the A127.

The underpass will reduce the volume of traffic using the junction, which in turn will improve journey times through the junction and reduce queue lengths on the approach arms.

Existing pedestrian crossing facilities are maintained at the signal junction with new crossing places on both Hobblythick Lane and Rochford Road.

A significant amount of third party land would need to be acquired in the immediate surrounding area to accommodate for the proposed underpass. Land negotiations are time consuming and expensive with no time scales. The junction would also be running at a severely reduced function with ongoing closures during the works which will cause a major strain to the surrounding road network.

For details of the option refer to Appendix 1.

15.1. Benefit:

- 15.1.1. An underpass below the existing junction to prioritise eastbound and westbound traffic and will greatly improve journey times.
- 15.1.2. Additional signalised pedestrian crossings on Hobblythick Lane and Rochford Road will create safer places for pedestrians to cross.

15.2. Constraints:

- Land outside the highway boundary will be required.

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- Major disruption during the construction phase of the scheme as alternative routes and diversions would be required. This would have a major impact on the surrounding road network increasing congestion.
- Estimated costs would be significantly more than the proposed £5M budget.

15.3. Traffic effect

- Single lane ahead A127 Eastbound (Below Ground)
- Single lane ahead A127 Westbound (Below Ground)
- Single lane ahead A127 Eastbound (Above Ground)
- Single lane ahead A127 Westbound (Above Ground)
- Additional dedicated A127 Eastbound left turn lane

16. Option 15

This option proposes to replace the existing signalised junction with a roundabout. This option does not accommodate an access into Hobleythick Lane from the A127 eastbound carriageway or from Rochford Road.

Vehicles previously using Hobleythick Lane for access to Southend and the Hospital would need to seek alternative routes on the surrounding network, increasing traffic volumes at the adjacent junctions.

Pedestrian crossing facilities are not included on the arms of the roundabout, where traffic exiting the junction would be required to wait and potentially queue onto the circulatory lanes impacting safety.

The use of third party land will be required for widening of the carriageway.

For details of the option refer to Appendix 1.

16.1. Benefit:

16.1.1. No benefits.

16.2. Constraints:

- Land outside the highway boundary will be required.
- Major disruption during the construction phase of the scheme as alternative routes and diversions would be required. This would have a major impact on the surrounding road network increasing congestion.
- Estimated costs would be significantly more than the proposed £5M budget.
- Controlled pedestrian crossing facilities removed on all arms of the junction.
- No access to Hobleythick lane via Eastbound A127.

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16.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- Single lane ahead A127 Westbound
- Dedicated Westbound left turn lane
- A127 Eastbound right turn lane removed
- Southbound left turn only access onto A127 Eastbound
- Northbound ahead to Rochford Road only via new roundabout

17. Option 16

This option replaces the existing signalised junction eastbound/westbound priority. Access onto the A127 from both Hobleythick Lane and Rochford Road is removed in this option.

Vehicle access to these side roads will instead be possible via alternative routes on the surrounding network, though this would cause an increase of traffic and potential delays on key neighbouring junctions such as Cuckoo Corner, which provides a direct link to Southend Airport and the Town centre.

Pedestrian crossing for north south movements across the A127 are provided only to the west of the junction. This single crossing place would require pedestrians to travel greater distances to cross the A127.

The use of land outside of the highway boundary, to the north west of the junction, is required for this option. This land is currently designated as public open space.

For details of the option refer to Appendix 1

17.1. Benefit:

- 17.1.1. East to west movements on the A127 without the interruption of access from the side roads will greatly improve travel times.

17.2. Constraints:

- Increase in congestion and traffic on the surrounding network.
- Single pedestrian crossing across the A127.
- Estimated cost above the £5M proposed budget.

17.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 2 lanes ahead A127 Westbound
- Northbound left turn only access onto A127 Eastbound
- Southbound left turn only access onto A127 Westbound
- Removed access to Rochford Road

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- Removed access to Hobleythick Lane

18. Option 17

This option comprises of a large roundabout with an underpass prioritising east/west traffic movements. The underpass will have a positive impact on the junction, reducing the volume of traffic on the roundabout, which in turn will improve flows for vehicles accessing the surrounding network.

Pedestrian crossing facilities are not included on the arms of the roundabout, where traffic exiting the junction would be required to wait and potentially queue onto the circulatory.

Removal of these pedestrian facilities will prevent pedestrians from crossing the A127 locally, which will increase journey times.

The use of land outside of the highway boundary, to the north west of the junction, is required for this option. This land is currently designated as public open space.

For details of the option refer to Appendix 1

18.1. Benefits

18.1.1. An underpass beneath the junction to prioritise east and westbound traffic movement will greatly improve journey times on the A127.

18.1.2. A reduction of traffic volume on the roundabout will improve journey times.

18.2. Constraints

- Land outside the highway boundary will be required.
- Major disruption during the construction phase of the scheme as alternative routes and diversions would be required. This would have a major impact on the surrounding road network increasing congestion.
- Estimated costs would be significantly more than the proposed £5M budget.
- Controlled pedestrian crossing facilities removed on all arms of the junction.

18.3. Traffic effect

- 2 lane ahead A127 Eastbound (Ground level)
- 2 lanes ahead A127 Westbound (Ground level)
- Single lane ahead A127 Eastbound (Underpass)
- Single lane ahead A127 Westbound (Underpass)

19. Option 18

This option proposes a fly over for northbound and southbound traffic only. Priority is given to north/south traffic removing this traffic from the junction below.

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The flyover consist of a two lane single carriageway, access to and from the A127 is made via left turn lanes for both east and westbound travel. The removal of the signalised junction will reduce the number of vehicle conflicts and improve journey times to all arms. This is offset by a reduction in available turning facilities for movements across the A127 into Holeythick Lane and Rochford Road. To facilitate the left turn access pedestrian crossing facilities have been removed from all arms.

The use of land outside of the highway boundary, to the north west of the junction, is required for this option. This land is currently designated as public open space.

For details of the option refer to Appendix 1

19.1. Benefit:

- 19.1.1. Dedicated lanes for north/south and east/west movements will greatly improve journey times.

19.2. Constraints:

- Land outside the highway boundary will be required.
- Major disruption during the construction phase of the scheme as alternative routes and diversions would be required. This would have a major impact on the surrounding road network increasing congestion.
- Estimated costs would be significantly more than the proposed £5M budget.
- Controlled pedestrian crossing facilities removed on all arms of the junction.
- Unrestricted vehicle flows to neighbouring junctions will cause additional congestion on the surrounding network.
- Traffic movements across the junction removed.

19.3. Traffic effect

- 2 lanes ahead A127 Eastbound
- 2 ahead lanes A127 Westbound
- Northbound left turn only access onto A127 Eastbound (Ground level)
- Southbound left turn only access onto A127 Westbound (Ground level)
- Single lane Northbound (Flyover)
- single lane Southbound (Flyover)

20. Option 19

This option proposes an east/west flyover on the A127. The flyover will have a positive impact on the junction and will improve journey times for traffic on the A127.

The flyover will reduce the volume of traffic using the junction, which in turn will improve journey times through the junction and reduce queue lengths on the approach arms.

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Existing pedestrian crossing facilities are maintained at the signal junction with new crossing places on both Hobleythick Lane and Rochford Road.

A significant amount of third party land would need to be acquired in the immediate surrounding area to accommodate for the proposed flyover. Land negotiations are time consuming and expensive with no time scales. The junction would also be running at a severely reduced function with ongoing closures during the works which will cause a major strain to the surrounding road network.

For details of the option refer to Appendix 1.

20.1. Benefit:

20.1.1. A flyover above the existing junction to prioritise eastbound and westbound traffic and will greatly improve journey times.

20.1.2. Additional signalised pedestrian crossings on Hobleythick Lane and Rochford Road will create safer places for pedestrians to cross.

20.2. Constraints:

- Land outside the highway boundary will be required.
- Major disruption during the construction phase of the scheme as alternative routes and diversions would be required. This would have a major impact on the surrounding road network increasing congestion.
- Estimated costs would be significantly more than the proposed £5M budget.

20.3. Traffic effect

- Single lane ahead A127 Eastbound (Flyover)
- Single lane ahead A127 Westbound (Flyover)
- Single lane ahead A127 Eastbound (Ground level)
- Single lane ahead A127 Westbound (Ground level)
- Additional dedicated A127 Eastbound left turn lane

21. Option 20

This option proposes a dedicated left turn slip lane on the A127 into Rochford Road, and an extension to the existing A127 eastbound right turn lane. The A127 westbound right turn lane is also removed in this option with the space associated with the right turn lane reappropriation to create a left turn lane into Hobleythick Lane.

Provision of a dedicated left turn lane into Rochford Road will reduce the impact of left turning vehicles at the junction. There is a tendency in the existing layout for vehicles, especially HGV's, entering lane 2 to make the left turn manoeuvre which reduces the performance of the junction as it limits the number of vehicles traveling through the junction.

Removing the A127 westbound right turn facility will allow the green time currently allocated to this movement to be distributed across all arms improving performance of the junction.

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Provision of a dedicated left turn lane into Hobleythick Lane will reduce the impact of left turning vehicles at the junction.

A new pedestrian crossing facility is also provided on Rochford Road creating a safer crossing place where there is currently none.

The use of land outside of the highway boundary, to the north west of the junction, is required for this option. This land is currently designated as public open space.

For details of the option refer to Appendix 1.

21.1. Benefits:

- 21.1.1. New pedestrian crossing location on Rochford Road providing a safer means to cross where there presently is none.
- 21.1.2. Extended A127 eastbound right turn lane to prevent right turn traffic blocking lane 2.
- 21.1.3. New A127 left slip lane into Rochford Road to reduce the impact of left turning traffic on the junction.
- 21.1.4. New A127 left turn lane into Hobleythick Lane to reduce the impact of left turning traffic on the junction

21.2. Constraints:

- Removal of the A127 westbound right turn lane will require vehicles to seek alternative routes on the road network and will impact on adjacent junctions.
- Transfer of public open space to the north west of the junction will be required.

21.3. Traffic effect

- 2 lanes ahead A127 Eastbound & 2 ahead lanes A127 Westbound
- Single lane ahead Northbound & single lane ahead Southbound
- Dedicated A127 Eastbound right turn lane extended
- Additional dedicated A127 Eastbound left turn lane
- Additional dedicated A127 Westbound left turn lane
- A127 Westbound right turn lane removed

A127 The Bell Junction Improvement- Options Appraisal Appendix 1 – Option Drawings

A127 The Bell Junction Improvement- Options Appraisal Appendix 2 – Appraisal Matrix