

## **Ardersier WWTW – Traffic Management Route Option Review Report**

### **Route Option Appraisal**

#### **1. Introduction**

Scottish Water’s proposal to construct a new Wastewater Treatment Works (WWTW) at Ardersier on land adjacent to the site of the existing Ardersier WWTW, provides additional wastewater treatment facilities to accommodate planned growth for the increased wastewater requirements relating to committed developments at Whiteness Head, Tornagrain new town and the Inverness Airport Business Park. The existing Ardersier WWTW provides secondary treatment for a population equivalent of 1,915 and receives domestic waste from Ardersier, Fort George and Tornagrain together with commercial and industrial waste from the existing Inverness Airport Business Park.

Planning Permission was granted in 2010, and subsequently extended in 2013. Scottish Water are now looking to commence development and off-site preparatory works have commenced.

There are concerns from the community with regard to the construction of a new wastewater treatment works and one of their concerns relates to the increase in traffic generated during the construction works and then the operation of the wastewater treatment works following completion.

Condition 15 of Scottish Water’s planning consent reference 10/02007/FUL states that, “Development shall not commence on site unless a Traffic Management Plan (TMP) to identify all traffic management aspects of the development has been submitted to and agreed in writing by the planning authority. Thereafter there may be no deviation from the approved TMP unless the written approval of the planning authority first”. The reason for the condition states, “In the interests of traffic safety and residential amenity”.

As part of their planning application, Scottish Water submitted an Access and Traffic section in their Environmental Statement report which considers three potential routes (see Appendix 1):

1. Route 1 – exits the A96 Trunk Road at Inverness Airport roundabout junction, northwards to meet the B9039 road, eastwards towards Ardersier on the B9039 Stuart Street and northwards to the WWTW site via the B9006 High Street.
2. Route 2 – exits the A96 Trunk Road at Whiteness Head junction, northwards to the junction with the B9092 road, westwards on the B9092 road to the junction with the B9006 road at Ardersier and northwards to the WWTW site via the B9006 Station Road and B9006 High Street.

3. Route 3 – exits the A96 Trunk Road at Whiteness Head junction, northwards to the junction with the B9092 road, westwards on the short section of B9092 (near Sunnyhillock), northwards onto the C1005 Muir of Balnagowan – Fort George Road via Baddock and southwards on the B9006 road to the WWTW site.

The Project Design Unit, Development & Infrastructure, have been asked to provide a report to review the three route options and identify and cost the mitigation works which may be required to accommodate the traffic generated by the development. The report is also to consider the risks to the delivery of any identified mitigation works which includes the requirement to occupy or purchase third party land out with the public road boundary.

It is intended that the report will be used as a factual report which details the mitigation works and risks associated with the proposed route options and will help inform Scottish Water's revised traffic management plan. The report will allow the public to consider the benefits and advantages of each option and make comment on each of the route options. The comments will then be reviewed and inform the preparation of the proposed scheme route options within the limits of the available funding.

## **2. Estimated Traffic Flows**

The Access and Traffic section (Chapter 13) of Scottish Water's Environmental Statement submitted as part of their planning application advises on estimated operational and construction traffic flows.

### **2.1 Estimated Operational Traffic Flows**

Their report states that the predicted traffic numbers associated with the operation phase of the works are limited and infrequent and the effect on the capacity of the roads is considered to be low and the magnitude of traffic increases are judged to be negligible. On that basis the report does not consider the operational traffic associated with Ardersier WWTW to be significant and do not consider their impact any further.

### **2.2 Estimated Construction Traffic Flows**

A summary of the estimated construction traffic generated by the proposed works is detailed in the Access and Traffic section of Scottish Water's Environmental Statement which states that the vehicle movements generated by the construction work tasks over the scheduled construction period of 18 months is estimated as an average of 4 HGV movements per day with a peak flow of 7 HGV movements per day over a two month period (month 11 to 12 inclusive).

In addition to HGVs the Access and Traffic section of Scottish Water's Environmental Statement advises the average number of construction vehicle movements per day is estimated at 28

movements over the scheduled construction period of 18 months with a peak flow of 31 movements over a two month period (months 11 to 12 inclusive).

No further details or updated information has been provided regarding the estimated operational and construction traffic flows.

### **3. Route Options**

#### **3.1 Route 1 – A96 Trunk Road – Inverness Airport Roundabout – B9039 – B9006 – Ardersier WWTW**

The section of route from the A96 Trunk Road to Ardersier village is generally adequate in terms of design and construction standards and no mitigation works are considered necessary to accommodate the increased traffic flows generated during the construction phase of the project. However, the visibility at the Inverness Airport Access Road junction with the B9039 road is substandard in the direction of Ardersier village and towards the junction travelling from Ardersier and consideration should be given to the routing of construction vehicles as detailed in 4.3 below to reduce potential road safety risks.

The section of route at the south end of Ardersier village on the B9039 Stuart Street consists of carriageway of varying widths with no provision of footways to serve the dwellings on the west side. Travelling northwards along B9039 Stuart Street from the B9092 Nairn Road junction, the housing development on the east side is served by a 1.5metre wide footway and the house boundaries are set back from the footway with a dedicated grass verge. On the west side there are properties located close to the carriageway edge served by a narrow footway and there are open grass areas between some properties. Towards the north end of B9039 Stuart Street, approaching the B9092 High Street, the carriageway narrows with vehicles frequently parked outside the residential properties within the road carriageway. The horizontal road geometry at the B9039 Stuart Street junction with the B9006 High Street is constricted with a tight radius bend, narrow carriageway reducing to 5metre width, buildings close to the carriageway edge, narrow footways and sections with no footway provision. The visibility from the junction is substandard and is restricted by the presence of buildings constructed within 1metre of the carriageway edge.

As vehicles emerge from the junction onto the B9006 High Street, traffic flows are further restricted by parked vehicles adjacent to the shops and businesses in the vicinity of the B9039 junction which adds to the restricted movement of vehicles and traffic conflicts with vehicles are likely to occur. Although the congested layout encourages slow vehicle speeds, manoeuvrability for larger vehicles and HGVs can be difficult and result in road safety being compromised. The presence of parking restrictions and yellow box junction marking appears to be ignored by some

vehicle drivers. It should be noted that enforcement is difficult to implement unless regularly administered by the enforcing authorities.

If this route is used as the preferred route for construction vehicles, it is recommended that the existing parking restriction, yellow box junction road markings and junction markings are considered for refreshing to help improve driver awareness of the presence of the parking restrictions and prohibition. Further enforcement should also help improve compliance and assist in reducing the likelihood of congestion and conflicts which may occur with the increase in traffic flows during the construction works. The costs of these works are estimated at £1,500.

The remainder of the route along the B9006 High Street improves in terms of wider carriageways and footways and the speed hump located at the Gun Lodge provides an effective traffic calming feature.

Traffic calming works have been carried out in Ardersier village a number of years ago in the form of speed humps. A total of two speed humps have been located at the north and south ends of the village. Given the excessive distance between the existing speed humps, they provide a localised traffic calming effect and are only effective at the specific locations. It is evident that two speed humps have been removed on the B9039 Stuart Street which suggests that physical traffic calming is not supported by the local community. It is therefore recommended that if this route is used as the preferred route for construction vehicles and given the increased traffic flows during the construction works, in order to improving road safety and encourage lower vehicle speeds, consideration should be given to providing temporary traffic calming measures. Speed Indicator Devices (SIDs) are generally accepted as providing effective traffic calming and if installed, should be located at appropriate locations between the existing speed humps to supplement the physical traffic calming effect of the speed humps. Consideration for the provision of a minimum of two back-to-back SIDs should be given for installation along this route at two locations, one on the B9039 Stuart Street and one on the B9006 High Street. The SIDs could be installed for the duration of the construction works and retained following the completion of the works and adopted and maintained by the Council Community Services area office to provide long term traffic calming improvements to Ardersier village. The cost of the installation of the SIDs is estimated at £12,000 for the four signs.

The ongoing maintenance of the SIDs is generally undertaken by the Street Lighting Section and the maintenance costs are estimated at £250 per year for each sign and the average life expectancy of a SID is estimated at 6-7years at which point full refurbishment or replacement would be anticipated.

It was also noted that the condition of the road surface pavement is poor in some sections of the route and consideration could be given to plane and inlay resurfacing works to improve the running surface. Throughout the roads in Ardersier there are longstanding service trenches which have deteriorated and subsided and has resulted in an uneven running surface. Given the depth of some of the depressions, these are likely to cause a nuisance in terms of noise to adjacent residents especially with heavier/larger vehicles and HGVs.

If Route 1 is used as the preferred route for construction vehicles, consideration could be given to resurfacing the worst sections of deterioration in consultation and agreement with the Inverness Area Roads Community Services team and the local community.

Along Route 1, the service trenches are generally located on the east side lane of the B9039 Stuart Street carriageway and surface improvements could be considered to resurface a 1.5metre to 2metre wide section of carriageway over the full length of Stuart Street. There are other areas on Stuart Street which could be included for localised surfacing repairs and the total cost of these works is estimated at £41,000. Further along Route 1 on the B9006 High Street, the section of carriageway between the B9039 junction and Cromal Terrace also suffers from subsidence due to sunken service trenches and resurfacing works could be considered over a 1.5metre to 2metre carriageway width and the cost of these works is estimated at £19,000.

### **3.2 Route 2 – A96 Trunk Road – Whiteness Head Junction – B9092 – B9006 – Ardersier WWTW**

The first section of this proposed route from the A96 Trunk Road along the U2218 Mcdermotts Road to join with the B9092 Whiteness Head junction is a good standard in terms of carriageway widths and geometry. However, it should be noted that for construction vehicles exiting the site from Ardersier and making the right turning movement onto the A96 Trunk Road is a potential road safety risk, especially at peak times, and consideration should be given to the routing of construction vehicles as detailed in 4.3 below to reduce potential road safety risks.

The following section of the B9092 Nairn – Ardersier Road between Whiteness Head junction and Ardersier has varying carriageway widths between 4.9metres and 6metres and has reasonable horizontal alignment apart from two tight bends at Smithstown. There are minimal areas of verge overrun at the narrow sections and similar to the B9093 road in Option 1, is considered to be generally adequate to accommodate the increased traffic flows generated during the construction phase of the project and no mitigation works are considered necessary over these two sections of Route 2.

The section of Route 2 at the south east end of Ardersier village from the B9092 Nairn Road junction with the B9006 Station Road to School Place has a road width ranging from 5.2metres to 5.8metres with associated footway provision of 1.6metres wide on the southwest side for the full

length and on the northeast side there is only footway provision limited to the length of the Station Drive development. This section of road is an access route to Ardersier Primary School and is well used by pedestrians and children accessing the school and local amenities. This section of road is supplemented by the part time 20mph speed restriction introduced through the Safer Routes to School part time 20mph initiative which improves road safety in the vicinity.

The section of road from School Place to the B9093 junction with the B9006 has a carriageway width ranging between 5.35metres to 6.5metres and footway width of 1.1metres with the presence of tight bends with poor forward visibility and is relatively steep in terms of vertical alignment.

If this route is used as the preferred route for construction vehicles, in addition to the refreshing of the existing parking restriction, yellow box junction road markings and junction markings at the B9039 Stuart Street junction with the B9006 High Street, this section of road from School Place to the B9093 junction would benefit improvement and it is recommended that “SLOW” road markings are considered to be installed to advise drivers to slow down as they approach the bends. The cost of these works including the refreshing of the existing parking restriction, yellow box junction road markings and junction markings is estimated at £2,100.

Similar to Route 1 above, it is recommended that in order to help improve road safety and reduce vehicle speeds along the B9006 Station Road, consideration should be given to providing Speed Indicator Devices (SIDs) as temporary traffic calming measures which should be located at appropriate locations. Consideration for the provision of a minimum of two back-to-back SIDs should be given for installation along this route at two locations, one on the B9006 Station Road and one on the B9006 High Street. The SIDs could be installed for the duration of the construction works and retained following the completion of the works and adopted and maintained by the Council Community Services area office to provide long term traffic calming improvements to Ardersier village. The cost of the installation of the SIDs is estimated at £12,000 for the four signs.

The ongoing maintenance of the SIDs is generally undertaken by the Street Lighting Section and the maintenance costs are estimated at £250 per year for each sign and the average life expectancy of a SID is estimated at 6-7years at which point full refurbishment or replacement would be anticipated.

Similar to Route 1 as detailed in 3.1 above, the condition of the road surface pavement is poor in some sections of Route 2 which is generally due to the deterioration of service trenches and consideration could be given to plane and inlay resurfacing of the worst sections of deterioration to improve the running surface in consultation and agreement with the Inverness Area Roads Community Services team and the local community.

On Route 2, the section on the B9006 Station Road between B9092 Nairn Road and the B9039 junction has deteriorated with subsidence due to sunken service trenches which produce an uneven running surface and surface improvements could be considered to resurface a 1.5metre to 2metre wide section of carriageway and the cost of these works are estimated at £35,000. As detailed in 3.1 above, the section of carriageway on the B9006 between the B9039 junction and Cromal Terrace also suffers from subsidence due to sunken service trenches and resurfacing works could be considered over a 1.5metre to 2metre carriageway width and the cost of these works is estimated at £19,000.

### **3.3 Route 3 – A96 Trunk Road – Whiteness Head Junction – B9092 – C1005 via Baddock – B9006 – Ardersier WWTW**

Route 3 takes a similar direction as Route 2 from the A96 Trunk Road along the U2218 Mcdermotts Road to join with the B9092 Whiteness Head junction. The U2218 Mcdermotts Road is a good standard in terms of carriageway widths and geometry. The section of the B9092 Nairn – Ardersier Road between Whiteness Head junction and C1005 Muir of Balnagowan – Fort George road has varying carriageway widths between 4.9metres and 6metres and has reasonable horizontal alignment with minimal areas of verge overrun at the narrower section and is considered to be generally adequate to accommodate the increased traffic flows generated during the construction phase of the project over this section of Route 3.

Route 3 continues eastwards along the C1005 Muir of Balnagowan – Fort George road. This road is a single track rural road serving small settlements and dwellings. A survey of the road was carried out to ascertain the existing road widths, the existing passing place dimensions, the existing fence boundaries and the general condition of the carriageway.

#### **3.3.1 C1005 Road Width**

The minimum geometric width requirement for a rural road is recommended to be 3.3metres and the existing road width along the C1005 ranges between 2.2metres to 3.4metres. The road is clearly substandard in terms of carriageway width and in its capacity to accommodate HGV vehicles. Existing traffic flows along the road would appear to be low and edge damage and verge deterioration of the carriageway is evident. Any increase in HGV movements will exacerbate the problem and cause additional damage to the carriageway edge and verge. It is therefore recommended that if this route is used as the preferred route for construction vehicles and given the increased traffic flows during the construction works, strip widening works would have to be considered to support and improve the road to comply with minimum geometric standards. The improvement works to strip widen the carriageway would be required for effectively the full length of road and the cost of these works is estimated at £180,000.

### **3.3.2 C1005 Passing Place Provision (see Appendix 2 & 3)**

The existing passing places along the C1005 were surveyed and when referenced to the passing place requirements set out in the Council's Roads and Transport Guidelines for New Developments, the existing passing places are substandard in terms of their geometry. The restricted width and length of the existing passing places make them unable to adequately accommodate HGVs and allow vehicles to pass safely which can cause disruption to traffic flow.

It is therefore recommended that if this route is used as the preferred route for construction vehicles and given the increased traffic flows during the construction works, improvement works would have to be considered to widen and extend the existing passing places to comply with current standards and the cost of these works is estimated at £115,000. It should be noted that any improvement works on this section of road would require construction vehicles including HGVs which would create disruption to local traffic and community during the works.

There are four locations along the route where the intervisibility of passing places is substandard and four new passing places would be required to provide sufficient intervisibility and maintain traffic flow along the route. Construction of the four new passing places is estimated at £30,000.

### **3.3.3 C1005 Junction with B9092**

The existing C1005 junction with the B9092 Nairn – Ardersier Road is substandard in terms of geometry to allow HGVs to safely enter and egress from the junction (see Appendix 3).

It is therefore recommended that if this route is used as the preferred route for construction vehicles and given the increased traffic flows during the construction works, improvement works would have to be considered to widen and extend the junction to comply with current standards and the cost of these works is estimated at £5,000.

### **3.3.4 C1005 Road Condition**

The condition of the existing road is also a concern in terms of the road construction and drainage. The section of road north east of Baddock is in poor condition with settlement evident (see Appendix 4) and soft verges which can cause safety issues regarding any vehicle over-running the verge. It is therefore recommended that if this route is used as the preferred route for construction vehicles and given the increased traffic flows during the construction works, improvement works would have to be considered to edge strengthening the carriageway over a 400metre length of road and the cost of these works is estimated at £40,000.



The verges along the route have received no grass cutting this year and the vegetation growth interferes with forward visibility at certain sections along the route.

It was noted during the survey that the existing road drainage is poor with limited provision for offlets and roadside ditches.

### **3.3.5 C1005 Mitigation Work Risks**

As part of the survey, measurements were taken of the existing road boundary between fence lines in the sections of road requiring passing place improvements and nine sections were identified as requiring third party land to accommodate the widening works. At these locations the associated consultation, agreement, land plan preparation, valuation and conveyancing will clearly be a risk in terms of the capability of delivering the necessary improvements to the requirements of the Council's Roads and Transport Guidelines for New Developments.

### **3.4 Route 4 – A96 Trunk Road – Inverness Airport Roundabout – B9039 – B9092 - B9006 – Ardersier WWTW**

An alternative option to consider for routing construction vehicles to the Ardersier WWTW is along Route 1 and as vehicles approach Ardersier village to turn eastwards along the short section of B9092 Nairn Road and then turn northwards at the B9006 junction and continue towards the Ardersier WWTW along Route 2. This option removes the issue with vehicles negotiating the substandard B9039 Stuart Street junction with the B9006 High Street. The B9092 Nairn Road has a carriageway width ranging from 7.2metres to 7.8metres with a footway on the north side and sections of footway on the south side in the vicinity of the housing developments. There is a raised junction on the B9092 Nairn Road at its junction with Manse Road and Connage Crescent which is an effective traffic calming feature.

The associated traffic calming works, road markings and resurfacing works detailed in both Route 1 and Route 2 above are recommended to be included for consideration if this route option is used.

## **4. Traffic Management**

As part of the planning condition with regard to the Traffic Management Plan, the applicant is to identify all traffic management aspects of the development and the following should also be considered for inclusion in the TMP.

### **4.1 Agreed Maximum HGV Speed**

Consideration should be given to agreeing a maximum speed of HGVs for the duration of the construction works which should also include effective monitoring.

#### **4.2 Route Timings**

Following agreement of the route to be followed by construction traffic, the timings should also be considered and include timings for HGV movements out-with school start and finish times

#### **4.3 Route Selection**

Consideration should be given to the following when selecting the preferred route which will reduce potential road safety risks:

- i) Access to the site off the A96 Trunk Road via the Whiteness Head junction towards the B9092 which will avoid the right turning movements at the Inverness Airport Access Road/B9039 junction.
- ii) Avoiding right turning movements onto the A96 Trunk Road by routing construction vehicles via the A96 Trunk Road at Inverness Airport roundabout.

#### **4.4 Events and Military Operations**

Consideration should be given to the associated likely increases in traffic flows and anticipated conflicts with regard to any events which are likely to be taking place within Ardersier village with consideration given to the traffic generated during these events including any event construction traffic. This should include the military tattoo and any variations in military operations which may impact on the traffic.

#### **4.5 Liaison With Highland Council Community Services**

Continued liaison with Community Services is recommended to ensure acceptance of any proposed mitigation works and that any requirements they may have with regard to their operations are included and incorporated into any proposals.

#### **4.6 Carbon Clever**

When considering the route options for construction traffic, consideration should be given to the Highland Council's Carbon Clever initiative and the commitment to cut greenhouse gas emissions.

### **5. Additional Considerations**

#### **5.1 Road (Scotland) Act 1984 - Section 96**

Section 96 of the R(S)A provides the opportunity for a roads authority to recover extraordinary maintenance expenses if heavy vehicles or traffic cause damage to a public road and it is recommended that a R(S)A Section 96 agreement is considered for extraordinary maintenance expenses which may be required for repairing any of the roads damaged by HGVs during the construction works for the Ardersier WWTW.

## **5.2 Winter Maintenance**

Given that the construction works are likely to extend through winter, the risks associated with winter maintenance and treatment priorities of the route options should be considered including treatment times and network hierarchy. Consideration will have to be given to the treatment times and how these will impact on the construction traffic and if additional gritting measures are necessary.

Routes 1 and 2 of the potential routes considered are generally primary gritting routes, in terms of the Council's Winter Maintenance Policy network hierarchy, along the B9092 and B9093 roads on the rural road network and these routes are treated between 6am and 9pm, Monday to Saturday. Within the urban areas of Ardersier, Routes 1 and 2 are secondary gritting routes, in terms of the Council's Winter Maintenance Policy network hierarchy, and these roads are treated between 6am and 6pm, Monday to Saturday.

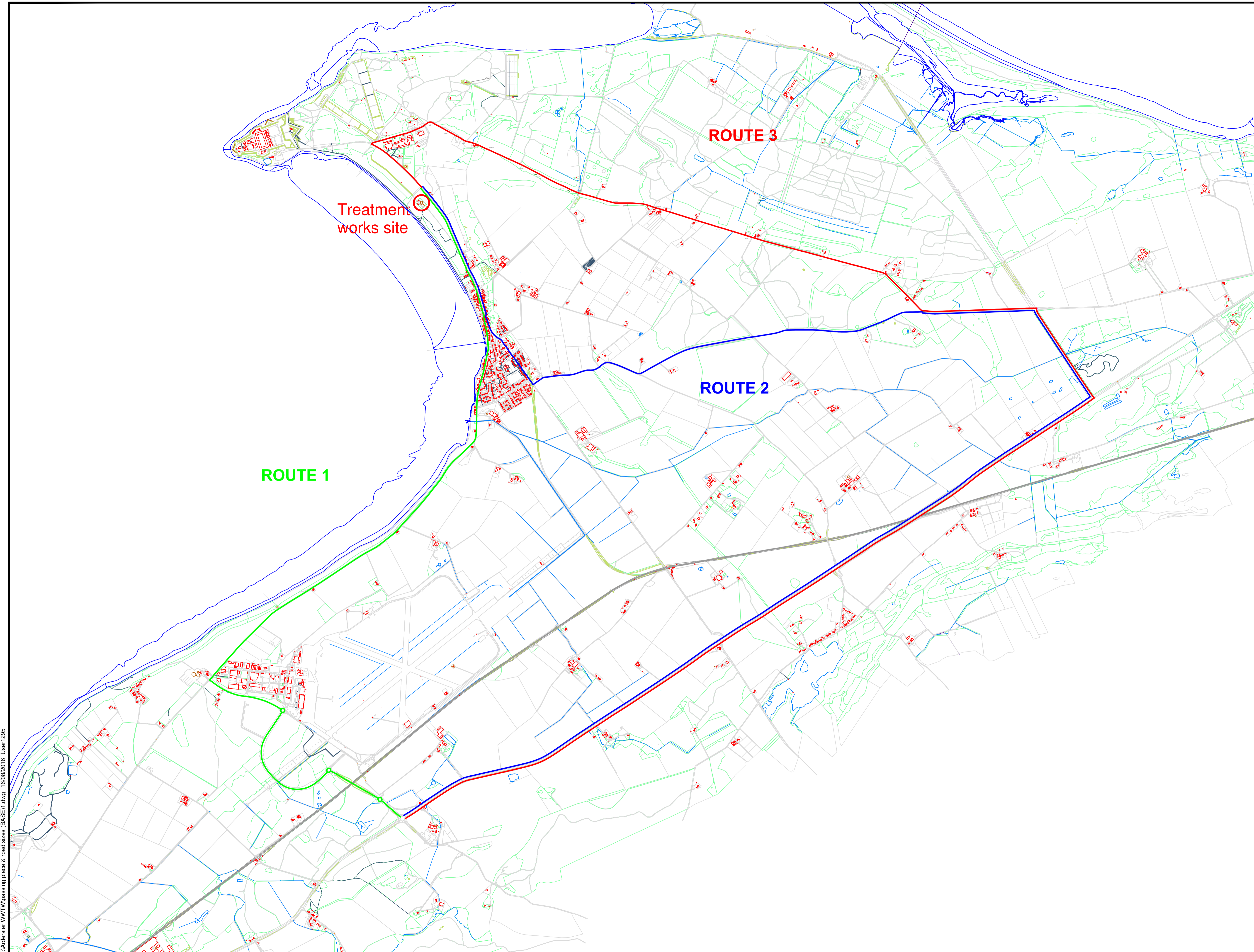
Route 3 is classified as an "other route" in terms of the Council's Winter Maintenance Policy network hierarchy and will only be treated as resources permit. This will add a risk to construction vehicles using this route when the route is untreated. Consideration may have to be given to an improved service which may be available from the Inverness Area Roads Community Services team or consideration may be given to the contractor carrying out the winter treatment to suit their construction traffic requirements.

Consultation with the Inverness Area Roads Community Services team should be carried out by the Contractor to allow the preferred route for construction vehicles to be considered and reviewed in association with the winter maintenance risks.

## **5.3 Existing Traffic Calming Speed Humps**

Consideration could be given to improving the construction of the existing two speed humps located at the north and south end of Ardersier village. These speed humps are effective in terms of slowing traffic and traffic calming, but may benefit road users and local residents by making the ramps less severe. This is likely to require the reconstruction of both existing speed humps and the estimated cost of these works is £10,000.

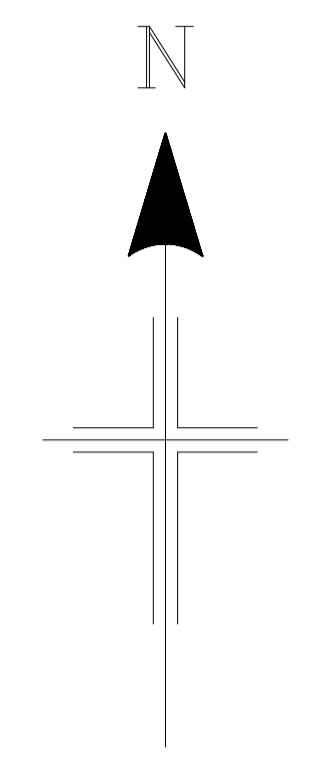
The removal of the existing traffic calming speed humps for the duration of the construction works may also be an option to consider. However, it should be noted that if these ramps are to be reinstated following the construction works, consultation may have to be carried out in accordance with The Roads (Traffic Calming) (Scotland) Regulations 1994.



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Project  
**Ardesier Waste Water Treatment Works**  
**Traffic Route Appraisal**

Title  
**Route Options**

Scale (at A1)  
**NTS**

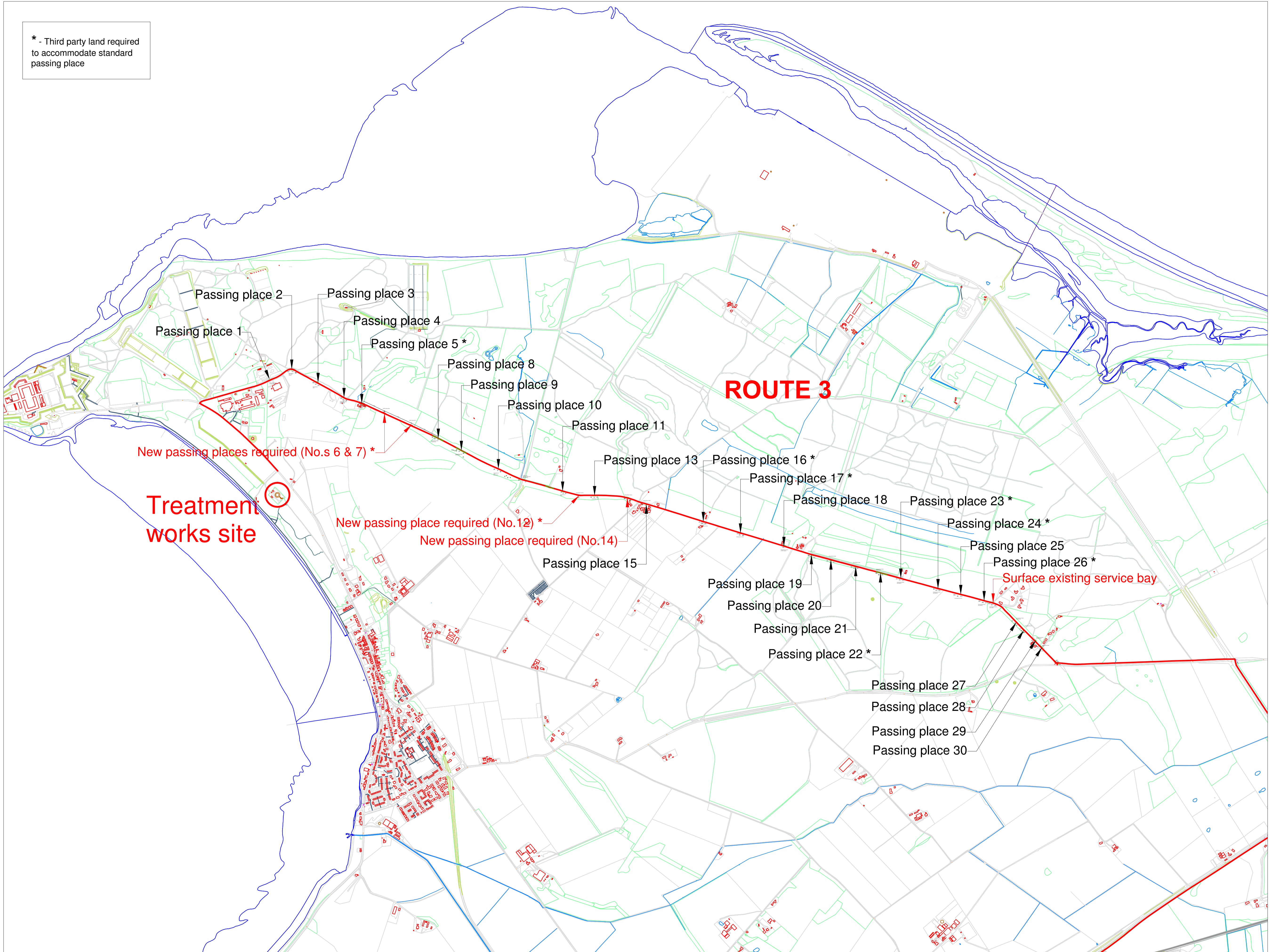
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| Checked | AM | Date | 16.08.2016 |

Project No:

Drawing No: **Appendix 1**      Rev: **0**

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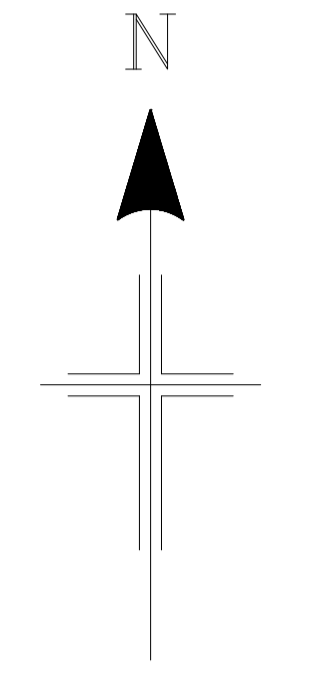
\* - Third party land required to accommodate standard passing place



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Project  
**Ardesier Waste Water Treatment Works**  
**Traffic Route Appraisal**

Title  
**ROUTE 3**  
Existing and new passing places

Scale (at A1)  
**NTS**

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Project No:  
Drawing No: **Appendix 2** Rev: **0**

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Passing Place 2



Passing Place 3



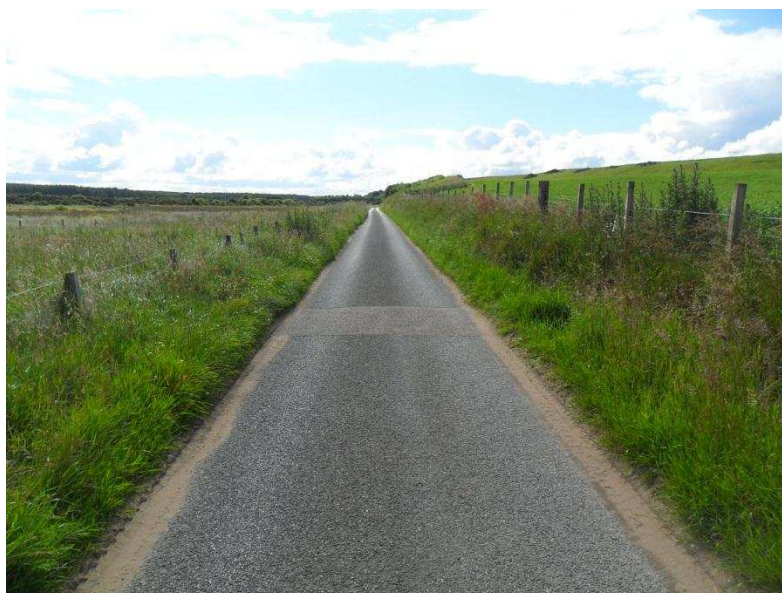
Passing Place 4



Passing Place 5



Passing Place 6 (proposed) - No photo for proposed location of passing place 7



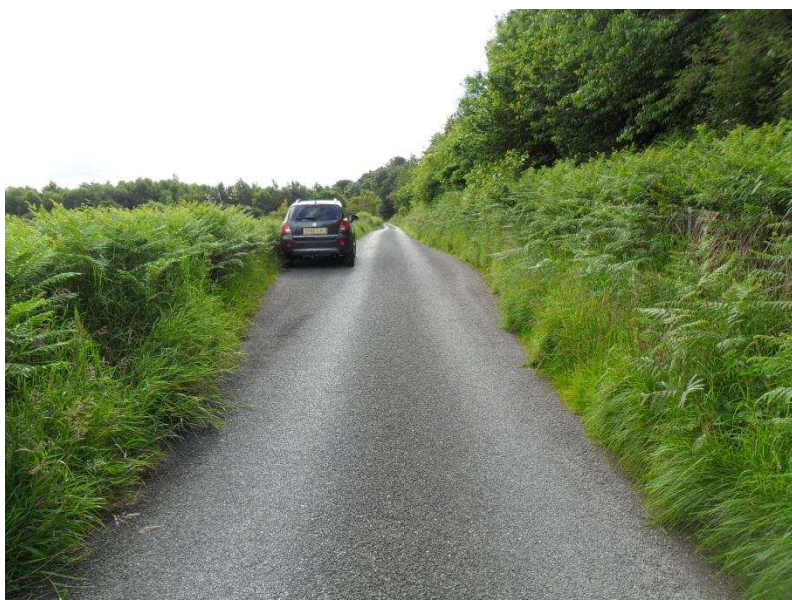
Passing Place 8



Passing Place 9



Passing Place 10

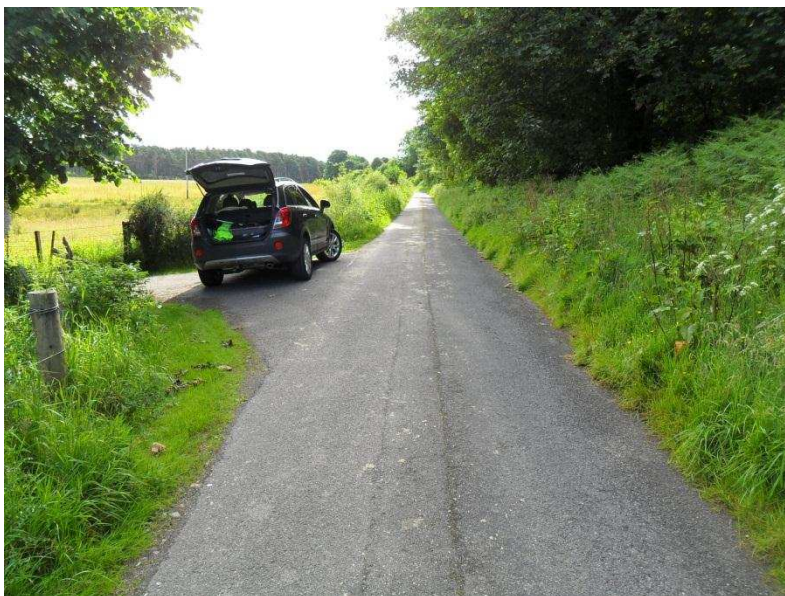


MOD access (located between passing place 10 & 11)





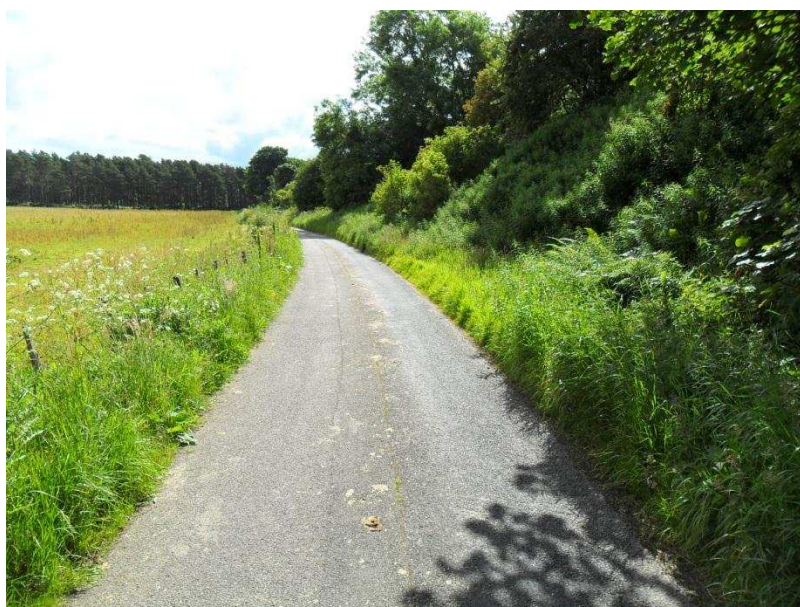
‘Littlejohn’ property access (located between passing place 10 & 11)



Passing Place 11



Passing Place 12 (proposed)



Passing Place 13



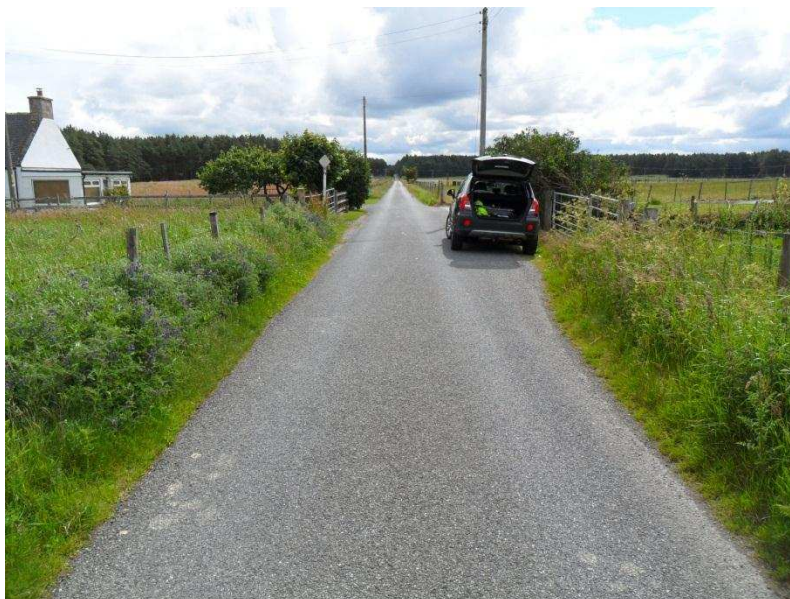
Passing Place 14 (proposed)



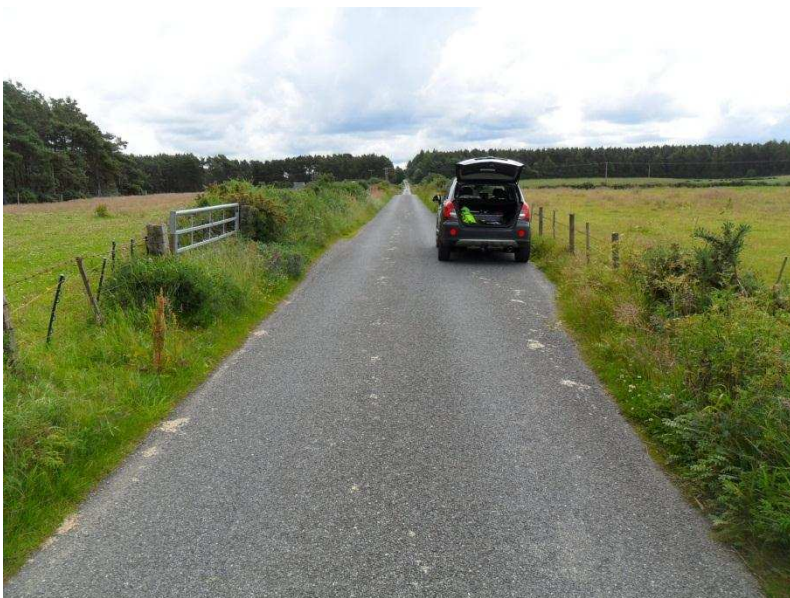
Passing Place 15



Passing Place 16



Passing Place 17



Passing Place 18



Passing Place 19



Passing Place 20



Passing Place 21



Passing Place 22



Passing Place 23



Passing Place 24



Passing Place 25



Passing Place 26



Unsurfaced loading bay (located before Firgrange estate)



Passing Place 27



Passing Place 28



Passing Place 29



Passing Place 30



Junction onto B9092





Example of lane deformation (located between passing place 6 & 7)

