

16 DISRUPTION DUE TO CONSTRUCTION

16.1 Introduction

16.1.1 This chapter reports on the predicted effects of Scheme construction on people and the natural environment from advance works through the pre-construction period to the completion of the Scheme. Construction impacts such as noise, dust and loss of amenity, although temporary, may be significant.

16.1.2 The construction period is expected to last two years, with the road opening planned for 2011. It is important that nuisance and disturbance to the local community and travellers on the A380 are kept to a minimum during this time. Whilst most construction impacts would be confined to within a short distance of the site boundary, other impacts could extend for a considerable distance along access routes or downstream if watercourses are affected.

16.1.3 The assessment of disruption due to construction includes only those impacts that result directly from the construction process, not those that result from the Scheme itself.

16.1.4 Whilst the construction process would include actions to minimise construction impacts, some adverse effects are unavoidable.

16.2 Construction Activities

Advance Works and Pre-construction Activities

16.2.1 Prior to the main Scheme construction works, a range of activities would be required in order to minimise the constraints imposed by the area's ecology/archaeology and the mainline and branch line railways. Activities include the following:

Advance Works

- Advance construction of culverts under the mainline and branch line railway (Subject to the outcome of further discussions with Network Rail);
- Construction of replacement property Elmcroft (including artificial bat roost in roof void). This is subject to planning permission;
- Archaeological investigations at Aller Cross.

Pre Construction Works

- Badger sett closure at Aller Cross;
- Bat roost closure (Properties Hazelbank and Elmsleigh);
- Site clearance prior to the onset of the bird breeding season;
- Installation of protective fencing around areas of vegetation to be retained;
- Establish site accesses and plant crossings;
- Archaeological watching brief during any soil stripping.

Main Construction Work

16.2.2 The main activities involved during Scheme construction would be as follows:

- Traffic management;
- Diversions of statutory services;
- Site clearance – mainly trees, hedges and other vegetation, but also building demolition (11 properties);
- Fencing;
- Stripping and storage of topsoil;
- Installation of monitoring boreholes and ground anchors;

- Off site drainage works (culverts and open channels);
- Bulk excavation works;
- Bridge construction;
- Retaining Walls;
- Carriageway drainage;
- Road pavement construction, and
- Road Furniture (safety fences, signs, road lighting traffic signals and road markings).

16.2.3 Each of these activities has the potential to cause adverse environmental impacts, but the most significant potential impacts are shown in Table 16.0.

Table 16.0 Potential Impacts Associated with Construction Activities

Activity	Potential Impacts
Establishment and use of offices and site compound	Noise, Ecological, Traffic noise, Visual impact
Site clearance	Archaeology, Air Quality, Noise, Ecological, Water quality
Monitoring boreholes and ground anchors, Topsoil strip and storage Bulk earthworks	Archaeology, Air Quality, Noise, Ecological Visual impact, Water quality
Pavements construction	Air Quality, Noise and vibration, Water quality
Bridge construction	Ecological, Noise and vibration, Water quality

Earthworks

16.2.4 The Scheme would involve substantial earthworks to form the cuttings and embankments. Where possible, excavated material would be reused in embankments, landscaping areas, reinforced earth structures and as rock fill, minimising both the environmental impact and the cost of the Scheme.

16.2.5 Most of the material won from the cuttings could be excavated by conventional earthworks plant and reused as fill in embankments, with the rest reusable as landscaping material. Material excavated at Kerswell Down would be used as rock fill/drainage blanket. Approximately 166,000 m³ of excavated material would be reused in landscape areas. There is one cutting (Chainage 3600 – 3700), which would pass adjacent to a landfill site.

16.2.6 The main earthworks quantities for the Scheme and the likely quantities of surplus material associated with it are shown in Table 16.1.

Table 16.1 Approximate Earthworks Quantities

Material Type	Volume (m ³)
Bulk excavation	785,000
Engineering fill requirements	480,000
Landscape fill requirements	166,000
Topsoil (excavation and placement)	Included above
Rock fill and Reinforced Earth fill Material requirements	185,000
Rock fill (site won in bulk excavation)	40,000
Reinforced Earth fill Material (site won)	81,000
Surplus excavated material (unacceptable)	18,000

16.2.7 Table 16.1 illustrates a surplus of material of 18,000 m³. This material would be unacceptable for use as general fill in structural embankments unless it were treated, processed or mixed to obtain an acceptable material.

16.2.8 During the busiest periods of the construction process, the works have been estimated to require a total of approximately 180 HDVs and 150 light duty vehicles (LDVs) or cars to access and exit the site each working day. This would increase the total daily traffic flow by 2% on the A380. The magnitude of the additional impact of construction traffic on pollution concentrations at receptors close to the existing A380 is thus considered to be minor.

16.2.9 However due to construction traffic accessing the site compound at Aller the increase in the total daily traffic flow on Aller Road would be of the order of 20%. The magnitude of the additional impact of construction traffic at receptors close to Aller Road is considered significant.

Bridges, Retaining Walls and Culverts

16.2.10 Bridges, retaining walls and culverts that would be constructed as part of the Scheme are detailed in Tables 16.2 & 16.3.

Table 16.2 Culverts built in Advance of Scheme (Subject to the outcome of further discussions with Network Rail)

Structure	Chainage (m)
Keyberry Mill Culvert (Structure 23)	Chainage 1350
Mainline Railway Culvert at Aller (Structure 24)	Chainage 2500
Branch line Railway Culvert at Aller (Structure 25)	Chainage 2750
Branch line Railway Culvert at Manor Drive (Structure 27)	Chainage 4300

Table 16.3 Bridges, Retaining Walls and Culverts in the Scheme

Structure	Chainage
Penn Inn North Approach Ramp (Structure 1)	Chainage 800
Penn Inn Flyover (Structure 2)	Chainage 1000
Penn Inn North Approach Ramp (Structure 3)	Chainage 1200
Addison Road Retaining Wall (Structure 4)	Chainage 1300
Aller Park Retaining Wall (Structure 5)	Chainage 1800
Sainsbury's Retaining Wall (Structure 6)	Chainage 1200
Central Retaining Wall (Part Structure 5)	Chainage 1650-2250
Aller Brake Road Retaining Wall North (Structure 8)	Chainage 1400-1900
Aller Brake Road Retaining Wall South (Structure 9)	Chainage 1950-2300
Aller Junction Overline Bridge (Structure 10)	Chainage 2400
Aller Road Railway Bridge (Structure 11)	Chainage 2600
Aller Cross Underbridge (Structure 12)	Chainage 2830
Maddacombe Road Overbridge (Structure 13)	Chainage 4010
Yon Street Overbridge (Structure 14)	Chainage 4520
Torbay Ring Road Cattle Creep Extension (Structure 18)	Torbay Ring Road
Aller Brook Culvert (Structure 19)	Chainage 2670
Sign Gantries (Structure 21)	Chainage 1600 & 2260
Sainsbury's Culvert (Structure 22)	Chainage 1100
Daccabridge Open Channel (Structure 26)	
Culverts (Structures 28, 29, 31, 32 & 33)	Chainage 5040 - 5600
Torbay Ring Road Underbridge (Structure 34)	Chainage 5920
Edginswell Lane Underbridge (Structure 35)	Chainage 5920

16.2.11 Preliminary design of the bridges, retaining walls and culverts have been completed but the advanced construction of the four culverts under the railway will be subject to the outcome of ongoing discussions with Network Rail.

Post Construction

16.2.12 Following completion of the construction works, there may be a small amount of completion work on landscaping and correction of any defects that become apparent. However, it is expected that the level of activity would reduce quickly following the Scheme opening.

Subsequent Maintenance Works

16.2.13 The contractor would be responsible for maintenance activities for 1 year after opening the new A380. After this period maintenance responsibility will fall to Devon County Council and Torbay Council. This would include the following activities:

- ecological monitoring;
- water quality monitoring (surface and groundwater);
- cleaning of gullies and signs and removal of litter;
- mowing of verges and other areas of grass; and
- periodic pruning, thinning or coppicing of shrubs and trees.

16.2.14 These activities would be carried out in accordance with good site practice, and as such should result in only minimal, temporary environmental impacts.

16.2.15 Small-scale repair work would inevitably be required over the lifespan of the Scheme and larger scale maintenance such as resurfacing/strengthening are necessary at intervals. The potential environmental effects of these works are potentially greater than those associated with the routine maintenance activities, although they would be temporary and relatively minor in comparison with the impacts associated with Scheme construction. Any potential impacts would be considered as and when works were necessary and, where appropriate, measures would be put in place to mitigate any adverse effects.

16.3 Properties Likely to be Affected by Construction Noise/Dust

16.3.1 Disruption due to construction noise and dust is normally only significant within approximately 100m of the site and at properties adjacent to haul routes outside the site. An indication of the extent of disruption is given by examining the number and type of properties within 100m of the site boundary of the Scheme.

16.3.2 Adjacent to the Scheme approximately 523 properties are likely to be affected by construction noise and dust. The majority of these properties are residential; however, there are approximately 26 commercial properties and 4 community properties, which includes 3 Churches.

16.3.3 In addition a further 283 residential properties are likely to be affected by construction noise and dust during construction of the culvert in Sainsbury's car park, the flood protection bank at Keyberry Mill, the St Marychurch Road/Aller Brake Road junction, the open drainage at Daccabridge and the drainage features in the wetlands at Edginswell.

16.3.4 In total 806 properties within 100m of the whole Scheme are likely to be affected by construction noise and dust.

16.3.5 The residential and commercial properties most likely to be affected by construction noise and dust, shown on Figures 6.4a & 6.4b and detailed on the Schedule of properties on Figure 6.4c, are: -

- Penn Inn PH
- Mc Donalds Restaurant
- Sainsbury's Superstore and petrol filling station
- Church of Jesus Christ and the latter day Saints

- Residential properties in Buckland, Milber and Aller Park particularly 4, 6, 8, & 14 Penn Inn Close, Queensway House, Reynell Villa, Pinewood Road, Addison Road, St Luke's Road and Aller Park Road
- St Luke's Church
- The Barn Owl
- Aller Orchard
- Trees, Old Newton Road
- Woodlands, Old Newton Road
- High View, Old Newton Road
- Kynance, Old Newton Road
- Three Corners, Old Newton Road
- Foredown Lodge
- Foredown Farm
- Foredown House
- Rock House
- 1, 2, 5 & 7 Greenhill Road
- United Reform Chapel, Yon Street
- 2-10 Huxnor Road
- Kendall, Edginswell Lane
- Studland, Edginswell Lane
- Homestead, Edginswell Lane
- Freeway, Edginswell Lane
- Ganders Park, Edginswell Lane
- Kerswell Gardens

16.4 Restrictions Governing Bulk Import and Export of Earthworks Material

16.4.1 The earthworks cut/fill has been managed so as to avoid, as far as possible, exporting material. Further work is ongoing to reduce surplus material. However, a quantity of material, 64,000 m³ will be imported to be used as rock fill and in reinforced earth structures.

16.4.2 There are various restrictions governing the bulk import and export of earthworks materials that are designed to minimise the environmental impact of these operations. The choice of borrow pits and disposal sites is ultimately a commercial decision, bearing in mind relevant legal requirements. Environmental impacts of existing quarries and disposal sites will already have been taken into account by the local planning authority when granting permission. Any new disposal sites or borrow pits would require planning permission and the local authority is required to consider environmental factors before deciding on applications. There are also legal controls to prevent illegal dumping of surplus fill.

16.5 Environmental Effects

16.5.1 This section outlines the main environmental effects associated with Scheme construction processes after implementation of mitigation techniques. Chapters 5 to 14 of this Environmental Statement also consider construction impacts as they relate to the specific topic covered by each chapter. Attention should be drawn in particular to Chapter 9 (Ecology and Nature Conservation), Chapter 11 (Water Quality and Drainage), Chapter 12 (Noise and Vibration), and Chapter 13 (Air Quality), as these are the areas where construction issues are most prevalent.

Land Use and Agriculture

16.5.2 Construction of the works is anticipated to have a minimal impact on adjacent land from Aller to the Torbay Ring Road for the following reasons;

- The surrounding area is predominantly agricultural;

- Land required for the Scheme would be acquired in advance of construction and fenced at the start of the construction process; and
- The site could be entered from public roads.

16.5.3 However, some agricultural activities could be affected depending on the timing of different sections of the works and any temporary access arrangements agreed between the Contractor and landowners.

16.5.4 It is currently anticipated that satellite construction compounds, or as a minimum mobile offices, would be developed in the vicinity of bridge sites as follows:

- Penn Inn Flyover
- Maddacombe Road Overbridge
- Yon Street Overbridge
- Torbay Ring Road Underbridge

16.5.5 Where possible these would be located within the construction site boundary, although it is possible that small areas of land outside the site boundary would be needed temporarily. The main construction compound/office would be located in the vicinity of the Aller grade separated junction on the parcel of land to the north-west of Aller Cross underbridge. This area has been selected given that it is located roughly in the middle of the Scheme and thus serves the online Penn Inn to Aller section of the Scheme and entry to the off-line section.

16.5.6 Access to the offline section of the Scheme will be permitted only from Aller and the Torbay Ring Road; construction vehicles will not be permitted to use minor roads. This site was also chosen as it under Devon County council ownership and is adjacent to one of the main elements of the Scheme, the railway tunnel. This area would be used during the construction phase, regarded and returned to agriculture following completion of construction.

16.5.7 A compound would be necessary west of the proposed culvert under the mainline railway at Keyberry to assist in thrust bore operations. This land may be required in advance of the main works.

Landscape and Visual Effects

16.5.8 Temporary visual impacts associated with the Scheme construction phase would be inevitable and would not be readily mitigated. The most significant potential temporary impacts include the following:

- The presence of a construction compound/site to the north west of Aller Cross underbridge;
- The presence of small construction sites at strategic locations;
- The presence of temporary haul roads;
- Construction of structures: temporary works and construction plant including cranes and piling equipment, these would be required especially at Penn Inn which is a sensitive area and would thus result in a significant visual impact for the residents of the Penn Inn / Milber area.
- Site clearance operations, including the removal of lengths of Devonian hedges, trees and grass, particularly prevalent along the off-line section;
- Stockpiling of excavated soils.

16.5.9 Large numbers of properties overlooking the construction activities, particularly between Penn Inn and Aller could be exposed to a temporary severe visual effect.

Ecology and Nature Conservation

16.5.10 Construction has a range of potential impacts on the nature conservation resources of the area, including:

- Land take
- Severance;
- Disruption of hydrology affecting wetlands;
- Culverting of watercourses;
- Pollution of watercourses, water bodies and wetlands;
- Dust deposition;
- Site lighting;
- Noise and visual disturbance.

16.5.11 In addition to land take; construction would have the potential to impact badgers, otter, reptiles, amphibians, birds, bats and invertebrate. As such, the construction programme would need to be carefully controlled in order to accommodate applicable ecological mitigation works (e.g. badger sett closure, bat roost closure) and to facilitate site clearance. Construction activities would also need to be controlled in order to prevent ecological damage associated with site run-off, dust, spillages etc. Control of the construction process would minimise the effects upon the areas sensitive ecological receptors.

Geology and Soils

16.5.12 Construction would have no significant impact on geology and soils.

Water Quality and Drainage

Effects on Surface Water

16.5.13 Construction would have no significant impact on water quality and drainage.

Effects on Groundwater

16.5.14 Construction would have no significant impact on groundwater.

Disruption to Road Users

15.5.15 Construction of the Scheme would directly affect the existing A380, as well as some of the associated side roads.

15.5.16 Disruption to road users would be minimised through sequencing the work and the provision of temporary speed limits and associated Traffic Management. Specific activities, which would be undertaken in order to minimise disruption to road users, are as follows:

- Between Penn Inn and Aller sequence the works to maintain a lane of traffic in both directions at all times.
- Maddacombe Road overbridge constructed off line. Opening provided in bridge deck falsework with a plant crossing to maintain haul route through the site.
- Yon Street overbridge a temporary road diversion required to build bridge.

Noise and Vibration

16.5.17 Some properties are likely to be considered for noise insulation against construction noise.

Air Quality

16.5.18 Construction dust can cause the following impacts:

- Soiling of surfaces eg window ledges and cars causing a nuisance
- Coating of vegetation and soil affecting the growth of crops
- Contamination of watercourses

16.5.19 Overall, the incorporation of effective site management procedures and good site practice would control dust would ensure that the impact on sensitive receptors would be minimised.

Pedestrians, Cyclists, Equestrians and Community Effects

16.5.20 The Scheme would sever two footpaths, Fp 45 at Sainsbury's and Fp 262/36 at Parsons Bridge. It is considered that it would be relatively easy to provide the permanent replacements but the diversion of Fp 262/36 would be dependent on the construction of the Torbay Ring Road Underbridge.

16.6 Summary

16.6.1 Construction of the Scheme would inevitably cause disruption to local people and users of the A380 between Penn Inn roundabout and Aller, despite the implementation of measures to minimise adverse effects. The significant effects are likely to be the number of properties affected by construction activities and disruption to road users.