APPENDIX 1
Summary Analysis of A27 Options and Potential Impacts

Background

The Chichester Bypass forms a critical section along the A27, the only strategic east-west road along the South coast. There are currently five at-grade roundabouts (the Fishbourne, Stockbridge, Whyke, Bognor and Portfield junctions) and one signalised junction (Oving). These junctions are where the radial routes linking the Manhood Peninsula and Bognor Regis with the City centre cross the Bypass.

Although the A27 is a strategic trunk road, the majority of traffic using the Bypass is local traffic entering and leaving Chichester itself. The close proximity of the junctions (all between 0.5km and 1.3km apart) and the conflict between the north-south and east-west traffic flows generates significant congestion and extensive queuing at peak times. This disrupts the mainline flow of the road and compromising its operation as a strategic route.

The level of traffic and congestion on the Bypass also impact on air quality and noise in the surrounding areas of Chichester. As a consequence, the Council has declared air quality management areas (AQMAs) at the Stockbridge Road junction, St Pancras and Orchard Street. Some sections of the A27 around Chichester are also identified as noise important areas by the Department for Environment, Food and Rural Affairs.

Scheme Objectives

The key Transport and Environmental Objectives of the Scheme are summarised below:

- Reduce congestion on the Chichester Bypass;
- Improve journey time reliability;
- Improve capacity and support the growth of regional economies;
- Improve accessibility to areas with tourist activity;
- Reduce adverse environmental impacts and eliminate where possible;
- Address existing Air Quality Management Areas (AQMAs) and ensure no further AQMAs are created as a result of selected option; and
- Address existing noise priority areas and ensure no further noise priority areas as a result of selected option.

The A27 Bypass improvements aim to provide a number of benefits for Chichester and the local area. These are summarised in the HE consultation brochure as:

Transport

- Improve capacity on the A27 Chichester Bypass and local road network
- Improve journey time reliability for road users in the area and beyond

Safety
- Improve road safety during construction, operation and maintenance for all involved, including road workers, all road users, and all other stakeholders

Community and environment
- Address existing AQMAs and ensure no further AQMAs are created as a result of the scheme
- Address existing noise important areas and ensure no further noise important areas are created as a consequence of the scheme

Economic
- Improve capacity and support the growth of the regional economy by:
  - facilitating timely delivery of the scheme to enable provision of housing demand, in line with the Chichester Local Plan
  - improving connectivity with local roads, including for non-motorised users
  - improving accessibility to tourist attractions

Consultation Options

The options published for consultation are summarised below:
- ***Option 1*** – Fishbourne and Bognor junctions to be grade separated with flyovers (with diversion of Terminus Road and Vinnetrow Road), Stockbridge and Whyke roundabouts to be replaced with signalised junctions allowing no right turns, Oving Road and Portfield junctions largely as agreed for Shopwyke Lakes planning permission with some adjustments. Total estimated cost = £182 million.
- ***Option 1A*** – As for Option 1, but retaining the existing Stockbridge and Whyke roundabouts. Total estimated cost = £139 million.
- ***Option 2*** - As for Option 1, but Stockbridge and Whyke junctions to be closed (with A286 and B2145 crossing A27 on bridges), and a new single carriageway Stockbridge Link Road (SLR) provided running from Fishbourne junction to B2145 at Hunston. Total estimated cost = £280 million.
- ***Option 3*** – Fishbourne roundabout to be converted to ‘hamburger’ junction, Stockbridge and Whyke junctions as for Option 1, Bognor roundabout to be enlarged and controlled with traffic lights, Oving and Portfield junctions as agreed for Shopwyke Lakes planning permission. Total estimated cost = £47 million.
- ***Option 3A*** – As for Option 3, but with Bognor junction grade separated with flyover (with diversion of Vinnetrow Road), Terminus Road diverted away from Fishbourne ‘hamburger’ junction, and widening A27 to 3 carriageways in each direction between Fishbourne and Bognor junctions. Total estimated cost = £172 million.

To support the A27 options consultation, HE has published a Consultation Brochure and questionnaire which includes detailed maps of the junction proposals included under each of the options. The HE has also set up a consultation website at https://www.gov.uk/government/consultations/a27-chichester-bypass-improvement-scheme

The analysis below presents a summary of the supporting information published by HE to support the A27 options consultation, focusing on three main areas:

- Traffic modelling
- Economic assessment
- Environmental impacts

Traffic Modelling

Traffic modelling has formed a key element in HE's work to appraise the different A27 options. HE has published a Traffic Forecasting Report (TFR) to accompany the consultation. The traffic modelling was undertaken by Jacobs using the Chichester Area Transport Model (CATM) which was revised to bring it up to date. The model was developed to represent a typical weekday in July 2014, the date at which the most recent traffic data was obtained. The modelling assessed traffic flows for the Weekday AM peak hour (08:00 – 09:00), Weekday Inter-Peak (IP) average hour (average of 10:00 to 16:00) and Weekday PM peak hour (17:00 – 18:00).

Future traffic flows were modelled for the years 2020 (opening year), 2035 (design year) and 2041 (final forecast year). Projected traffic flows and journey times for each of the options under consideration were assessed against a baseline 'Do Minimum' scenario for the years 2020, 2035 and 2041. The 'Do Minimum' scenario was based on the current highway network at 2014 together with already identified highway changes in adopted planning documents that are expected to be in place by the relevant forecast years. The resulting traffic forecasts were used for design development, economic assessments and environmental assessments.

The traffic forecasts incorporated baseline projections of future population and employment growth, and included Government assumptions on the economic parameters to estimate overall changes in travel demand on the highway network. In addition, the modelling work factored in future planned housing and employment development locations within the local area (based on the current Chichester Local Plan and emerging Arun Local Plan) and planned local highways and transport improvements (based on information supplied by WSCC). Planned housing developments of 120 or more dwellings and larger commercial developments (developments likely to generate more than 1,000 additional vehicle trips per weekday) were modelled explicitly.

Note: There appear to be inconsistencies between the Consultation document and background documents (Traffic Forecasting Report and Economic Assessment Report) when describing the alterations proposed for the Portfield roundabout as part of the various A27 options. In the Consultation document, the description given for Options 1, 1A and 2 is 'Modifications proposed to Shopwhye Lakes development. Roundabout to be re-marked to provide 3 lanes from the southern approach of A27, around to Westhampnett Bypass', whilst the Options 3 and 3A plans refer to 'Improvements by Shopwhyke Lakes development'. However, Table 1-2 in the EAR and Table 4-4 in the TFR list Options 1, 1A and 2 as 'As Do Minimum 2035/2041' (which assumes the junction alterations agreed with the Shopwhyke Lakes developer), Option 3 is described as 'Segregated left turn lane for A27 southbound' (which is not part of the design agreed for Shopwhyke Lakes) and Option 3A 'As Do Min 2020' (which would completely exclude the Shopwhyke Lakes alterations).

It therefore appears that the junction designs used for Portfield in the traffic modelling differ from those described in the Consultation document for all the A27 options under consideration. It is assumed that this would affect the traffic modelling results, although the extent of the difference is not clear.

The traffic modelling work assessed projected journey times between fixed points along the A27, and also for other routes passing through Chichester city via junctions on the A27. This generated the following results.

- Modelling of the 'Do Minimum' scenario showed that journey times will increase considerably over the period from 2014 by 2035 and 2041.
- Options 1, 2 and 3A would result in reduced journey times overall against the 2014 baseline. Options 1A and 3 also performed better than the 'Do Minimum' scenario, but still resulted in some worsening of journey times by 2041 compared to the 2014 baseline.
- For travel along the A27 itself, Option 2 was found to perform very well in reducing the journey time considerably in peaks, whereas Option 3 showed least improvements when compared against base as well as 'Do Minimum', with 2035 journey times worsening compared to 2014.
- For all the other routes tested, Option 2 showed substantial improvements in journey times compared to the 'Do Minimum' scenario and ranked highly compared to the other online options, whilst Option 3 showed the least improvements.

Much of the traffic forecasting work is complex and highly technical. However, this analysis is critical as it underpins the conclusions of the Economic Assessment Report (see below) regarding the relative economic and transport benefits of the different A27 options. WSCC officers will be undertaking a more detailed analysis of

the published traffic data, but the comments here present an initial assessment from CDC officers.

The modelling of the 'Do Minimum' scenario shows that journey times will increase considerably over the next 20-25 years if no action is taken to improve the A27. All of the A27 options published for consultation would reduce journey times overall against the 2014 baseline. However, the journey time improvements for Options 1A and 3 would be relatively minor and would still lead to a worsening of journey times by 2041. Option 1A proposes no improvements to the Stockbridge and Whyke junctions (although allowing for small scale developer funded improvements), which it is assumed would lead to increasing congestion affecting the Bypass as a whole, whilst Option 3 proposes only relatively limited at-grade alterations to all of the junctions It should be noted that Option 3 is very similar to the junction proposals identified in background work for the Chichester Local Plan, where these improvements were designed only to mitigate the impact of the planned new housing development, rather than address wider traffic problems on the A27.

Options 1, 2 and 3A would all provide more significant reductions in journey times. However, of these, Option 2 would provide the greatest improvements to journey times, with significant time savings in peak periods.

The analysis of journey times for specific routes and areas shows significant differences between the degree to which different areas and local communities would benefit from the A27 options proposed. Overall the greatest time savings will be for east-west/west-east journeys using the A27 Bypass itself. Many journeys on local roads will see less benefit or (in a few cases) lead to longer journey times. Generally all options provide benefits for routes to/from Chichester city through the elimination of congestion at the existing junctions on the A27 Chichester Bypass. However, the options result in some increases in traffic flows and journey times on other parts of the road network, for example affecting some routes to/from the Manhood Peninsula and the 'Bournes' area west of Chichester. Once again, Option 2 appears to show the greatest time savings for journeys between most areas. However, this option still shows minor increases for a few journeys (e.g Havant to Fishbourne).

Economic Assessment

HE has prepared an Economic Assessment Report (EAR) as part of the appraisal of options. The stated purpose of economic assessment is to facilitate the quantification and monetisation of scheme costs and benefits. Schemes are assessed against relevant government objectives, which include:

- provide good value for money in relation to impacts on public accounts;
- improve transport economic efficiency for business users and transport providers;

- improve transport economic efficiency for consumer users; and
- improve reliability.

The economic assessment is based on the outputs of the transport modelling, comparing the various A27 options with the 'Do Minimum' scenario, based on a range of standard parameters. It mainly involves the determination of the costs and benefits of the scheme using traffic flows and speeds obtained from the traffic model to derive travel time savings.

A summary of estimated economic benefits and costs arising from different parameters is provided below.

Construction costs

The Consultation Brochure shows estimated construction costs for each of the five options, ranging from £280 million for Option 2 (the highest cost) to £47 million for Option 3 (the lowest). The EAR explains that these figures represent expected costs in the actual years of expenditure, taking account of the outturn costs for construction, land, preparation and supervision, and are estimates from within a wider range of cost forecasts used by the HE. The EAR does not provide a breakdown showing the disaggregated costs of the proposals for individual junctions. The operating and maintenance costs of the Scheme have also been estimated within the benefit-to-cost assessment, but these costs are much lower and show relatively little variation between the options.

The construction costs vary considerably between the consultation options and this is clearly a factor which has influenced the results of the HE's benefit-to-cost analysis (see below). The EAR states that the Road Investment Strategy budget for the A27 Bypass scheme falls in the range £100 to £250 million. This is the main reason given that the offline options considered (Options 4, 5 and 6), which exceeded this budget, have not been taken forward for public consultation.

However, Option 2 at £280 million also exceeds the upper limit of the budget. It should be noted that the Council and WSCC have jointly committed to providing an additional £20 million towards the scheme (of which CDC is committed to provide £10 million to be provided through developer contributions from planned strategic housing development (which the Council has already begun to secure through planning agreements). Since Option 2 has been included in the consultation, it is assumed that HE consider that the DfT may be prepared to factor in the potential for additional funding. There is also the potential that budgetary constraints may lead to the rejection of Option 2, or result in it being only partially implemented (perhaps with a commitment to undertake further improvements at a later date).

Travel time savings and vehicle operating costs

The EAR combines the projected time savings arising from the A27 options with assessed Vehicle Operating Costs[1]. Overall, the largest portion of the travel time benefits for all options occurs during the inter-peak period (about 40%-44%) followed by the PM peak (31%-36%) and AM peak (20%-26%). The majority of the options would increase overall journey distances (due to traffic restrictions or closure affecting some of the A27 junctions), but this cost would be outweighed by the improvements in journey times and reliability. Commuters and Other users would experience journey time savings generally at the expense of vehicle operating cost disbenefits. Business users would experience substantial overall savings. As suggested by the traffic modelling work, the EAR concludes that the greatest benefits would result from Option 2, with the least benefit resulting from Option 3, with the greatest benefits occurring for east-west journeys (and vice versa) along the improved A27.

Accidents

The EAR concludes that the removal of at-grade junctions as proposed in some options at Fishbourne and Bognor, and the banning of certain movements at some of the junctions such as Stockbridge, Whyke and Oving, should result in a reduction in accidents. However, the completed A27 Scheme would lead to increased traffic using the A27 and junctions, due to additional trips and other traffic transfers, which would alter flows on existing roads. This could in turn result in an increased or decreased number of accidents away from the scheme itself. The accident results for the wider study area show that for all options there would be an overall decrease in accidents on road links and a mixture of an increase and decrease in accidents at key junctions. When links and junctions are combined together there is an overall reduction of accidents costs for Options 1A, 2 and 3, but a slight increase in accidents in Options 1 and 3A. More detailed analysis is provided in Appendix G of the EAR.

It is difficult to interpret this data, which is expressed as ‘Accident Costs’, rather than number of accidents per se. Although it is assumed that the proposed road and junction layouts have been designed to improve safety, the higher traffic flows generated in some options could contribute to increased accidents. Also, the EAR does not assess the potential changes in accident levels on local roads away from the A27.

Based on the EAR, Option 2 records the greatest potential benefit, which is partly due to the closure of the Stockbridge and Whyke junctions, though this would be to

[1] Vehicle Operating Costs (VOC) are defined as costs incurred by vehicles in use, such as fuel, maintenance, and wear and tear.

some extent offset by the accidents costs associated with the new SLR. Option 3 performs quite well, particularly through the introduction of a new westbound carriageway for A27 at Portfield avoiding the roundabout (which was apparently included in the traffic modelling, but is not shown in the Option 3 scheme in the Consultation Brochure), but the traffic light controlled junctions at Stockbridge and Whyke with restrictions on right turns are expected to increase accident costs. The grade separation at Fishbourne and Bognor junctions proposed in the majority of options also appears to increase accident costs (as does the 'hamburger' roundabout at Fishbourne) although this may be due to the increase in traffic.

Construction duration and delays

As previously noted, the construction times vary considerably between the different A27 options. The proposed construction schedule for each option is shown in Table 4-3 in the EAR. This indicates that it is intended to phase the construction works across the different junctions, presumably to avoid all the junctions being affected by roadworks simultaneously. Traffic delays due to construction and maintenance are treated as disbenefits to users in cost terms. As would be expected, maintenance delay costs would be greatest for Option 2 and least for Option 3.

Whichever online option is selected, the proposed scheme will involve extensive roadworks for an extended period. This will create delays and frustration for local residents and visitors, disrupt local communities, and could potentially have a damaging impact on the local economy and businesses, at least temporarily. However, the EAR also highlights that significant road maintenance works are likely to be required in the future, even if the Bypass improvements do not take place.

Carbon emission, air quality and noise

The EAR indicates that cost benefits for carbon emissions have not been calculated at this stage and detailed assessment will be carried out at a later stage. However, it is expected that carbon emissions will increase, and this will represent an additional cost arising from the scheme, which will need to be factored in when detailed assessment is undertaken. Subject to this caveat, the cost benefits from air quality improvements are expected to occur for all the options, with the greatest benefits resulting from Options 1 and 3. The best performing options in terms of noise are Options 3 and 2, with Option 3A performing worst.

Journey time reliability

The EAR states that the main cause of unreliability on the A27 Chichester Bypass is due to high levels of congestion during peak hours that compromises the day-to-day journey times. Based on the current layout of the junctions on the A27 Chichester Bypass, during peak hours the day-to-day journey time variability is severe. The A27

Scheme is expected to have reliability consequences that have important implications for the economic case. The reliability elements of the project are considered just as important as the congestion relief. The traffic modelling indicated that all the options would provide improved journey time reliability, with the greatest cost benefit being recorded for Option 2, followed by Option 1, and the least benefit resulting from Option 1A.

Summary Economic Assessment conclusions

Overall, the EAR assessment shows that the travel time savings represent the majority of the potential scheme benefits for all of options. These would substantially outweigh the disbenefits that are expected to occur from construction and maintenance delays (and longer journey distances for some trips). Overall, the greatest travel time improvements would arise in the inter-peak period, so that Business users and Other users would gain the greatest benefits. Commuters would also gain some benefits, though to a lesser degree.

The EAR's overall analysis of all measured costs and benefits indicates that Option 2 generates the highest cost value benefits, but also the highest costs, whereas Option 3 results in the lowest costs, but also the least benefits. In terms of Benefits to Cost Ratio (BCR), Option 3 records the best BCR score, although this is mainly due to the low costs resulting from this option. Option 2 achieves the best BCR of the other options, although all the other four options record fairly similar BCR scores. In terms of DfT's Value for Money assessment (VfM), Options 1, 1A, 2, and 3A are considered to represent 'High value for money' whilst the Option 3 represents 'Very high value for money'. However, in the HE Consultation document, the Value for money is shown as 'High' for all five options.

Environmental Impacts

To support the A27 proposals, HE has prepared an Environmental Impact Assessment (EIA) in the form of an Environmental Study Report (ESR). The ESR provides a broad overview of constraints and relative environmental benefits associated with the proposed options. It also identifies likely further assessment and mitigation requirements for the subsequent stages of the Scheme.

The objective of the assessment is to ensure that any adverse and/or beneficial impacts of the Scheme proposals on the environment are identified and assessed accordingly and that any adverse impacts are minimised or mitigated where possible. Opportunities for environmental enhancement are also considered. The assessment considers both the construction and operational phases of the Scheme.

Air quality

The ESR concludes that air quality effects would be beneficial overall for all the options except Option 1A, which would have an overall adverse effect, with the best improvement overall achieved by Option 2. However, all effects are unlikely to be considered significant due to the small numbers of receptors affected. The air quality effects would be beneficial overall for all options at St Pancras AQMA (but not sufficient to bring the AQMA within air quality objective limits).

Cultural heritage

The ESR concludes that all of the Scheme options, except Option 3, have the potential to result in significant adverse effects upon the historic environment during construction, with adverse effects anticipated on the setting of designated assets, buried archaeological remains within the construction area, and the historic setting of the local area. Further detailed assessment will be required for the preferred option, once confirmed.

Landscape

The ESR concludes that, for all options, the construction phase would have adverse visual impacts, particularly Option 2 involving the SLR within the more rural area south of the A27 Bypass. Once in operation, the effects from the at-grade junctions would be minimal, therefore Option 3 would have an overall neutral effect. All other options would have potentially significant effects resulting from the proposed flyovers at the Bognor junction (all options except Option 3) and (to a greater degree) at the Fishbourne junction (Options 1, 1A and 2) due to its proximity to the Fishbourne Conservation Area and Chichester Harbour AONB. The proposed widening of the A27 to three carriageways in Option 3A would also have potentially significant visual effects. Landscaping planting is proposed as part of the design of all options, which would help to reduce adverse effects over time, as the planting matures to form an effective screen.

Nature conservation

The ESR concludes that following the implementation of recommended mitigation measures, there would not be a direct or indirect effect during construction or operation on the majority of designated sites within the study area. However, Options 1 and 2 are anticipated to have a slight adverse effect on Chichester Gravel Pits and Leythorne Meadow SNCI due to the effect on potential protected species associated with the designation. Options 1, 1A and 2 would also have a slight adverse effect on the Fishbourne Meadows SNCI, as the relocation of the A259 at Fishbourne junction would slightly encroach into the designated site.

Geology and soils

The ESR states that, during construction, all options have the potential to result in significant adverse effects upon geology and soils, resulting from potentially contaminated land and construction processes. There could be large adverse effects on groundwater from the mobilisation of previously unidentified contaminated material, and moderate adverse effects could result from physical removal and degradation of soils. However, the operational A27 scheme is not expected to result in any adverse effects for geology and soils, as the drainage design for the preferred option would keep all surface water runoff, and therefore potential sources of pollution, away from the groundwater and soils.

Materials

The ESR states that all options will generate effects associated with the transportation of materials and imports of primary aggregates and/or fill material, and exports of surplus waste material.

Noise and vibration

The ESR identifies numerous noise sensitive receptors close to the proposed options, including residential properties, farms and schools. Several Noise Important Areas (NIA) were designated along the existing A27 under the Environmental Noise (England) Regulations 2006, the largest being at Stockbridge, between Bognor and Portfield Junctions, and at Tangmere.

There is potential for construction activities to generate significant effects, and mitigation would be a necessity at some locations. Based on preliminary mitigation assumptions, such as noise barriers and thin course road surfacing, there would be an overall reduction in significant effects on the balance of changes with Options 1, 2, and 3, although Option 3 predicts the highest total number of properties still experiencing a significant observed adverse effect level (SOAEL) and Options 1A, 2 and 3A predicting lower numbers exceeding a SOAEL for areas mapped. Whilst it is predicted there will be increases in noise experienced for the adjoining communities, further improvements for all options may be possible as the design progresses through the implementation of enhanced mitigation measures. The South Downs National Park would remain unaffected by all Scheme options. The nearest parts of the Chichester Harbour AONB would potentially be affected by small increases in noise by Option 2.

Road drainage and water environment

The ESR identifies areas classed as Flood Zone 3 along the proposed route at the Stockbridge and Portfield junctions, with areas of Flood Zone 2 at the Whyke, Bognor and Portfield junctions. Finished road levels would therefore need to ensure no flooding of the carriageway and no blockage of flow paths that may increase

flooding elsewhere. Potential effects on water quality would be managed by pollution prevention and best practice construction methods.

Effects on all travellers

The ESR considers effects on non-motorised users during construction and operation periods, including changes to public rights of way etc, journey length and journey experience. It also considers the impacts on vehicle travellers during construction and operation, in terms of journey length and experience.

The ESR concludes that all A27 options would result in some adverse effects on non-motorised users during the construction period, with temporary closures and diversions likely to be put in place. However, overall these impacts are considered to be relatively minor (classed as 'Not significant'). Once the A27 scheme is in operation, there will be potential changes to journey lengths and access to facilities for non-motorised users. On balance the effects for non-motorised users are predicted to be beneficial.at this stage of assessment. Any loss of public rights of way or crossing facilities would be replaced where possible to reduce severance caused by the A27. Safety is a primary consideration when designing new non-motorised user facilities.

For vehicle users, the construction phase for all options would be expected to create 'driver stress', although mitigation measures would be put in place; including the phasing of works and the implementation of a Construction Environmental Management Plan (CEMP). Once in operation, the effects on vehicle travellers and traffic flows are predicted to vary for all options, based on the TFR data. Views from the road would alter for travellers and would on balance be restricted for all options with frequent structures blocking the view, although there may be some open views to the wider landscape. The SLR would provide views over arable fields, although landscape planting would reduce visibility to the wider landscape over time.

Community and private assets

The ESR has considered the impact of the A27 options on community and private assets, including demolition of private property; loss of both private and public land; effects on both development and agricultural land; and community severance. It concludes that for all options, increased traffic during construction would generate adverse effects upon development land, particularly since the construction period would overlap with adjacent major housing developments such as at Shopwhyke and Tangmere. There would potentially be community severance due to temporary reduction in access to community facilities.

The ESR identifies the following requirements for land acquisition and demolition of properties resulting from the consultation options.

- At the Fishbourne junction, grade separation (Options 1, 1A and 2) would require the demolition of 3 greenhouses at Lower Turnpike Nursery, Appledram Lane, the loss of 200 sq.m of car park at 18 Terminus Road and 500 sq.m of Chichester recycling centre, and the loss of around 0.75 hectares of agricultural land (Grade 3a).
- At the Stockbridge junction, a A286 flyover (Option 2) would require demolition of a total of 11 properties – to the south of the A27, this would comprise 7 residential properties along the A286 Stockbridge Road and the Chichester Mormon Church at 1 Queens Avenue, whilst to the north of the A27, it would include demolition of Stockbridge House (Grade II listed)[2]. The Option 2 proposals would also require the loss of part of the car park at Byron Court and Lacy House, Stockbridge Road and the front garden of 32 Stockbridge Road.
- At the Whyke junction, a B2145 flyover (Option 2) would require demolition of 4 residential properties[3] and demolition of 3 garages for residents of Whyke Close. It would also require the loss of 4 residential gardens just north of the roundabout on Whyke Road, and part of the car park at Whyke Court.
- At the Bognor junction, grade separation (Options 1, 1A, 2 and 3A) would require the demolition of 2 buildings on the Fuel Depot site north-east of the junction (a farm shed and empty warehouses), the loss of 1,500 sq.m of the north western edge of Chichester Lakeside Holiday Park and 800 sq.m of the former MOD Fuel Depot, and the loss of around 1.4 hectares of agricultural land (mostly Grade 2).
- The Stockbridge Link Road (Option 2) would require the demolition of buildings at Lawrence Farm, immediately south of the Fishbourne junction, the loss of the garden at 34 Birdham Road, 5,500 sq.m of land at the Hunters Lodge Riding Centre near North Mundham, and around 9.7 hectares of agricultural land (mainly Grade 1 or 2) belonging to multiple land owners.
- Widening of the A27 between the Fishbourne and Bognor junctions (Option 3A) would require limited land take affecting access roads to some businesses adjacent to the Bypass, very small losses of land from 20 residential gardens, and a total of around 1.25 hectares of agricultural land (Grade 2, 3a and 3b).

For all options, there may be a need for temporary land take and community severance impacts during the Scheme construction period. There may also be increased traffic disruption due to the A27 works coinciding with construction work at nearby major development sites, for example Shopwhyke Lakes.

Overall, the ESR concludes that Option 2 would require the loss of 20 properties (13 residential and 7 non-residential), Options 1 and 1A would result in the loss of 5

[2] The ESR refers to demolition of 3 properties along Stockbridge Road north of the A27 Stockbridge junction, but it is not clear from the Consultation document plans which properties (other than Stockbridge House) are referred to.

[3] These are stated in the Environment Study Report to be 91-93 Whyke Road (4 terraced houses on the east side of the road) although the consultation brochure plans appear to indicate demolition of 4 houses at Whyke Court on the west side of the road.

properties (non-residential), whilst Option 3A would lead to the loss of 2 properties (non-residential). No properties would be lost in Option 3. All options except Option 3 would result in some loss of agricultural land, with the most substantial loss resulting from Option 2 (due to the SLR) and to a much lesser extent Option 3A (due to widening of the A27). Once complete, all options are expected to provide slight benefits to development land due to reduced journey times.

In addition to the impacts highlighted in the ESR, Council officers would also highlight the potential impact of the Bognor junction alterations on the proposed redevelopment of the MOD Fuel Depot site where a hybrid outline planning permission (14/04284/OUT) has recently been granted for B2/B8/Trade uses, a discount food retail unit and 2 ancillary roadside catering units. Grade separation at Bognor junction (Options 1, 1A, 2 and 3A) would require land take from the site, which could require redesign of the development layout. The new roundabout on the A259 associated with the diversion of Vinnetrow Road would also involve some land take and would require redesign of the site access agreed in the hybrid planning permission.

Combined and cumulative effects

The ESR assesses the combined and cumulative effects resulting from multiple actions on receptors over time. Combined effects are those resulting from the inter-relationship between different environmental factors within a single project; whilst cumulative effects are those resulting from different projects (e.g the effect of the A27 construction works in combination with development on the major housing and employment sites proposed in the Local Plan).

During scheme construction, the ESR concludes that the combined effects would be on balance ‘Significant adverse’ for Options 2, and 3A, largely due to significant adverse effects predicted for landscape character and historic setting, cultural features, the water environment and ecology. The combined effects for Options 1, 1A and 3 are classed as ‘Not significant adverse’. Once operational, Options 1, 1A and 3 would on balance result in a ‘Not significant adverse’ effect. Options 2 and 3A would have combined ‘Significant adverse’ effects, largely due to significant adverse effects predicted for landscape, cultural features and ecology.

During construction, potential temporary cumulative effects with the additional proposed major developments would, on balance, be ‘Not significant adverse’ for Options 1, 1A and 3, but ‘Significant adverse’ for Options 2 and 3A, largely due to predicted adverse effects on ecology. Once operational, permanent cumulative effects would, on balance, be ‘Not significant neutral’ for Options 1, 1A and 3, with some beneficial effects offsetting any adverse effects. Options 2 and 3A are expected to have a cumulative ‘Not significant adverse’ effect, largely as a result of their greater adverse effects in terms of landscape and ecology.

The ESR states that all of the ‘Significant’ combined and cumulative effects identified will require further assessment to determine the most suitable mitigation measures that can be proposed as part of the preferred option.

Environmental Study Report - Overall Conclusions

A brief assessment of the ESR conclusions for each topic area is provided in the ESR Summary report. For all options, the majority of construction stage effects could be minimised and managed through the implementation of best practice measures, implemented through the CEMP. Appropriate design, including landscape and ecological design measures, and appropriate drainage design (incorporating SuDS) would also ensure that potential operational effects for the preferred option would be minimised as far as possible.

During the operational phase, there is the potential for significant adverse effects upon a number of features, which will require further assessment at the detailed scheme design stage. This includes potential effects upon protected species and priority habitats, heritage and archaeological features, key views, landscape character and local communities, during both construction and once the Scheme is operational. Option 2 and Option 3A present the greatest likelihood of significant effects arising, largely as a result of the introduction of the SLR for Option 2, which would also result in the greatest area of habitat loss and potential effects on the River Lavant flood plain; or as a result of the additional land between Stockbridge and Bognor Junctions in Option 3A. Option 3 presents the least potential for significant adverse effects, due to the minimal nature of the proposed works.

Further assessment will be carried out for the preferred option for both construction and operation, which will be presented within a Environmental Impact Assessment Report (EIAR) that will be prepared for the preferred option at the detailed design stage.