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# Tees CCPP Project

The Tees Combined Cycle Power Plant Project  
Land at the Wilton International Site, Teesside

## Volume 1 - Chapter 10

Regulations – 6(1)(b) and 8(1)

**Applicant:** Sembcorp Utilities UK  
**Date:** November 2017

## **CONTENTS**

<b>10</b>	<b>TRAFFIC AND TRANSPORT</b>	<b>10-1</b>
<b>10.1</b>	<b>INTRODUCTION</b>	<b>10-1</b>
<b>10.2</b>	<b>ASSESSMENT METHODOLOGY</b>	<b>10-11</b>
<b>10.3</b>	<b>ASSESSMENT CRITERIA</b>	<b>10-14</b>
<b>10.4</b>	<b>BASELINE CONDITIONS</b>	<b>10-18</b>
<b>10.5</b>	<b>ASSESSMENT OF IMPACTS AND EFFECTS</b>	<b>10-23</b>
<b>10.6</b>	<b>CONCLUSIONS</b>	<b>10-32</b>

## 10 TRAFFIC AND TRANSPORT

### 10.1 INTRODUCTION

#### 10.1.1 *Terms of Reference for this Chapter*

10.1 This chapter presents an assessment of the likely significant effects due to traffic and transport from construction, operation and decommissioning of the Project. The baseline traffic and transport environment around the Project Site and surrounding area is described, potential effects identified, proposed mitigation measures listed and an assessment of the significance of residual effects is made. Supporting traffic and transport information is contained in the Transport Assessment (TA) contained in *Annex I.1*.

10.2 With regard to the traffic and transport, the potential effects based on the Project as defined in *Chapter 5*, will include the following.

- Increased traffic flows (both cars and heavy good vehicles (HGV)) along principal routes during construction could have the potential to increase congestion and the risk of accidents.
- During construction, the transport of abnormal indivisible loads (AIL) could require junction modifications or cause bottlenecks on the network.
- During operation, slight increases in vehicle traffic could potentially result in localised effects.

10.3 Air quality and potential noise impacts associated with traffic are considered in *Chapters 7* and *8* respectively.

10.4 Decommissioning is not specifically assessed in terms of its quantified impacts as it is considered that effects will be broadly similar to construction and the same mitigation measures would be applied.

#### 10.1.2 *Basis of Assessment including Realistic Worst Case Scenario*

##### *Introduction*

10.5 Assessment has been undertaken using observed traffic junction counts undertaken in April 2017, as well as staffing numbers and shift patterns provided by Sembcorp.

10.6 The assessment includes factoring growth in traffic flows into the future baseline, thus addressing potential cumulative effects of other development that could lead to more traffic on the roads in future years.

10.7 As explained in *Chapter 5*, the Project may be constructed in two phases separated by up to five years. For the purposes of the traffic and transport

assessment two different scenarios have been assessed rather than adopting a single worst case scenario.

- Scenario One is the construction of a CCGT generating station with an output capacity of up to 1,700 MWe in a single phase starting 'year 1'.
- Scenario Two is the build of two trains with an output capacity of up to 850 MWe (aggregated output 1,700 MWe) each divided over two phases: Phase One starting year 1 and Phase Two starting five years after the first train begins operation with construction concurrent with the operation of the first 850 MW CCGT.

10.8 Scenario One construction impacts represent a worst case for construction starting in year 1; Scenario Two Phase One construction impacts are therefore not separately assessed because the effects are reduced and the same mitigation would be applied and thus is more than sufficient. Scenario Two Phase Two, construction of second CCGT and operation of first CCGT, represent a worst case for Scenario Two.

*Scenario One*

10.9 For Scenario One, there will be up to 945 staff involved in the construction phase. The staff will be working a 12hr shift (07:00-19:00). Construction worker travel is largely expected to be by car/van with a majority likely to be vehicle sharing due to workers generally operating in 'teams', thus reducing associated trips. An average car occupancy of 2.5 construction staff per car has been assumed, based on professional judgement and experience gained on similar projects / sites, this level of occupancy has been agreed with Highways England following consultation conducted on the PEIR as detailed in email correspondence contained in Appendix A of the TA which is included as *Annex I.1*. All construction staff will use the existing site entrance from the A1053 Greystone Road. Construction workforce car parking will be within a dedicated part of the temporary construction laydown area.

10.10 Sembcorp advises that there will be up to 68 HGVs per day at the peak of the construction phase delivering materials and removing waste from the construction site. These will be scheduled to take place outside of the peak periods on the local and strategic highway network.

10.11 Regarding AIL, it is anticipated that the components for the CCGT (s) will be manufactured abroad and shipped into a port located on the east coast of the UK.

10.12 The most likely destination is Teesport with a view to shipping many of the parts directly into the Tees Valley area.

10.13 Any abnormal loads from Teesport will be transported primarily via the Strategic Road Network A66 and A1053 and the local Road Network Tees Dock Road.

- 10.14 Traffic figures and routes for the Project have been used to inform the air quality and noise assessments of traffic related emissions.
- 10.15 For Scenario One, there will be 48 new members of staff when the Project is operational. Staff working 12 hour shifts will not all be arriving to and departing from the site during the observed AM (07:30-08:30) and PM (16:30-17:30) peak hours. The day staff will work an eight hour day, starting at 09:00 and finishing at 17:00. Based on local census data it is assumed that 90% of the operational staff will travel to the site by car, with 8% of these car sharing. All operational staff will use the existing site entrance from the A1053 Greystone Road.

*Scenario Two*

- 10.16 Each construction phase of Scenario Two will involve approximately 630 workers with the same shift patterns, car occupancy rates and other assumption as for Scenario One.
- 10.17 Operation of the Phase One 850 MWe CCGT will involve a workforce of 46, again with other assumptions, including total number of employees when both 850 MWe CCGTs are operational, as for Scenario One.

**10.1.3** *Consultation*

- 10.18 Sembcorp has carried out various formal and informal consultation activities as part of the EIA process. The formal Scoping Opinion is set out in *Annex B*. As part of the scoping process, consultation responses relevant to traffic and transport were received from Highways England (HE), North Yorkshire County Council (NYCC), Redcar and Cleveland Borough Council (RCBC) and North York Moors Park Authority (NYMPA) are detailed in *Table 10.1*.

**Table 10.1 Consultation Responses**

Source	Consultee Comment	Response
Highways England (HE) (Scoping Opinion)	<p>Activities on the Wilton International site and in this industrial area are extensive. Like this development, many others are generally industrial in nature and the highest traffic volumes fall during the construction phase.</p> <p>Various large construction projects are planned around the area. This development should be co-ordinated such that the transport impact from construction and construction worker commuter traffic is at manageable levels on the SRN in consideration of other construction projects. As well as a Transport Assessment (TA) we would therefore welcome a Construction Transport Management Plan to consider the impact of this development.</p> <p>Further, it is stated that there is a direct access from the A1053 with a left-in leftout access requiring return trips to undertake a U-turn at either Greystones or Westgate Roundabouts to complete a return trip. We require to be consulted on any access point directly form the SRN and would welcome a TA paying particular attention to assessing the impact of additional traffic and its routing on our network both in terms of capacity and safety. Any programme of usage of abnormal loads may need to be given consideration in due course. In considering these factors, we wish to support Redcar and Cleveland to enable development to take place in the Borough and will work to ensure that any issues are resolved and are generally supportive of increased economic activity here when possible.</p>	<p>All comments from HE have been considered / addressed. The TA and this chapter consider the percentage increases both on A1053 Greystone Road and at the Westgate and Greystone Roundabouts.</p>
North Yorkshire County Council (NYCC) (Scoping Opinion)	<p>Thank you for the consultation document from Redcar and Cleveland Council. As with other developments of this type the construction phase will have the most impact on the highway network especially the near the site and highways leading to the site.</p> <p>That said the impact on the surrounding highway network may also be high depending on whether and how the construction management plan is prepared. We suggest NYCC has some involvement in this to at least comment on the content.</p> <p>Materials being brought to the site are likely to be delivered from areas within North Yorkshire such as quarry material and waste material may need to be transported from the site across the region. In the first instance [NYCC] would expect the trunk road network to be used to transport this material eg A19 &amp; A174 and avoid where possible communities which otherwise may be affected by the additional impact of the development in terms of large HGVs passing through the community.</p>	<p>A Construction Traffic Management Plan (CTMP) has been produced and is contained in <i>Annex 1.2</i>.</p> <p>All materials will use the Strategic Road Network (SRN) where possible, all details relating to the routes for construction materials will be addressed within the CTMP.</p>
Redcar and Cleveland Borough Council (RCBC) (Scoping Opinion)	<p>The Plant Scoping Report includes a Traffic and Transport section (paragraph 6.8), and although [RCBC] have no significant issues with the proposal, [RCBC] do have the following observation/comments which will need to be addressed.</p> <ul style="list-style-type: none"> <li>Section 3.5 indicates that there will be a maximum 945 employees during the construction period (400+ for 16 months of the 39 month period) and around 60 employees during the operational phase.</li> </ul>	<p>All trip generation assumptions for the Project have been obtained from predictions provided by Sembcorp and these have then been used within the TA and ES chapter to</p>

Source	Consultee Comment	Response
	<ul style="list-style-type: none"> <li>• Section 6.8 Traffic &amp; Transport gives general information on the processes that will be used to calculate traffic generation and distribution at the site. As far as possible, calculations should make use of information on staff numbers and shift times from the proposed operators of the site rather than estimates derived from databases such as TRICS.</li> <li>• A1053 Greystone Road that provides access to the site is a trunk road so Highways England will have a particular interest in the impact of the development and operation of the site.</li> </ul> <p>RCBC also draw attention to local planning policies as follows:</p> <ul style="list-style-type: none"> <li>• Local Development Framework: Core Strategy CS26 Managing Travel Demand</li> <li>• Emerging Development Plan, Publication Local Plan (2016): TA1 Demand Management Measures and TA2 Travel Plans</li> </ul>	<p>assess the percentage impact on the SRN in the vicinity of the Project Site.</p> <p>Highways England has been consulted on the Project proposals.</p> <p><i>Section 10.1.4</i> discusses these and other planning policies.</p>
<p>Highways England (HE) (PEIR response, synthesised and not verbatim)</p>	<p>Highways England commissioned Ch2m to review the draft Transport Assessment. As a result of this review HE requested that the car share ratio be amended to 2.5 workers per car for the construction phase, an additional assessment is carried out within the TA for the impact of the construction peak traffic both in the morning and the evening. With regard to cumulative impact schemes, HE requested that both the York Potash Project and the Lotte Chemical PET Plant are considered further.</p> <p>Highways England recommended that the Project should co-ordinate with other major construction projects in the area, particularly during the construction phase.</p> <p>Further information is required (as identified below)</p> <ol style="list-style-type: none"> <li>1) Proposed site access details to be presented for review by the Network Operator;</li> <li>2) Confirmation of the proposed number of car parking spaces for employees after the construction phase(s) is complete;</li> <li>3) Greater clarity is provided on the profile of construction phase traffic for both scenarios including an hourly profile of anticipated traffic movement;</li> <li>4) The traffic impact assessment to be expanded to assess the impact of development traffic against background traffic on the network for the anticipated peak hour of construction traffic movement; and</li> <li>5) The cumulative impact assessment to present the traffic data of identified major developments including the development traffic and compare this against the background traffic across the growth scenarios.</li> </ol>	<p>HE has confirmed that the access arrangement is acceptable. The Network Operator (Autolink Concessionaires Ltd) has been consulted and advised HE that they have no comments on the proposal. The proposed parking provision is summarised within the Technical Note response to HE, provided in Appendix A of the TA (<i>Annex 1.1</i>) and it is further summarised in paragraph 3.5 of the TA.</p> <p>The ratio for construction workers has been decreased to 2.5 per vehicle within the TA and ES as requested by HE in its email response provided in Appendix A of the TA. An additional 'Sensitivity' assessment has been included within the TA in Section 7 for the additional time periods in relation to the construction traffic trips. The methodology applied was set out in the Technical Note response issued</p>

Source	Consultee Comment	Response
		<p>to HE and the HE agreed to the proposed methodology as being appropriate in their email response (both provided in Appendix A of the TA).</p> <p>Further consideration has been given to the other planned and proposed projects that could have possible cumulative impacts with the Project. Sembcorp will seek to coordinate with the proponents of these schemes and the local highway officers prior to the start of the Project construction to co-ordinate the delivery of these projects so that any cumulative impacts as a result of the construction traffic are minimised. This approach has been discussed and agreed in principle with Highways England. A copy of the correspondence is included in Appendix A of the TA included in <i>Annex I.1</i>.</p>
North Yorkshire County Council (NYCC) (PEIR Response)	<p>[NYCC] would expect most traffic will be generated at the construction phase. The traffic section of the EIA has stated that material will be brought to the site mainly from the Tees port which means a short road trip to the site and will not affect the travelling public in North Yorkshire. However if any materials are brought to site from local quarries in North Yorkshire, HGV traffic volumes may have an effect on North Yorkshire's road network. Therefore if possible North Yorkshire County Council as LHA would like some involvement in the Construction Phase Plan when the developer is preparing this document to advise on the preferred roads to use and any mitigation measures required.</p>	<p>A draft CTMP is provided as <i>Annex I.2</i>. This will be updated once a construction contractor has been appointed and will take into consideration such matters as the requirements for minerals, source locations and routes to the Project Site. The CTMP will be developed in consultation with HE, RCBC and NYCC.</p>
North York Moors Park	This Authority notes that in relation to the EIA cumulative impact assessment of traffic impacts in relation to the	The York Potash Project Transport



Source	Consultee Comment	Response
Authority (NYMPA) (PEIR Response)	York Potash project ( project 34 table 7.1 Appendix C - it states the project is a low traffic generator. The EIA in respect of that project predicts up to 127 two way HGV movements a day for up to 5 years which does not tally with your assessment. You may wish to consider whether your assessment underestimates the combined traffic impacts, given almost all the mine construction traffic towards Whitby is likely to pass through the Wilton highway network).	Assessment, prepared by Royal Haskoning DHV, dated 15th February 2015, has been reviewed and it has been concluded that this development will have minimal impact on the proposed CCGT Project during its construction phase. The York Potash Project is currently under construction and is due to be completed in 2020 and will therefore not be undergoing construction at the same time as the proposed CCGT Project.

#### 10.1.4 *Policy and Legislation*

##### *General Considerations*

- 10.19 This assessment has been made taking into consideration the national, regional and local policy documents.
- 10.20 A Transport Assessment (TA) (*Annex I.1*) has been produced for the Project.
- 10.21 Sustainable travel modes are the key driver of the TA process, with the aim to minimise the numbers of vehicles a development generates by encouraging and improving accessibility to non-car modes of travel such as public transport, walking and cycling.
- 10.22 Given the location of the Project, opportunities for operational or construction staff to travel by non-car modes are acceptable. The Project will consider provision of a shuttle bus link from the Wilton International main access to the Project Site for pedestrians and cyclists who travel to the main access. Although pedestrian and cycle access to the Project Site from Wilton International is theoretically feasible on the existing internal road network, with personnel coming onto the site via the West Gate and then following Boundary Road West, it is precluded by safety considerations such as exposure to a release of harmful gas.
- 10.23 Relevant legislation, policy and guidance is set out in *Chapter 2* of this ES. This section identifies only those policies that are relevant to transport.

##### *National Policy*

- 10.24 The Overarching NPS for Energy (EN-1) states at paragraph 5.13.2 that “*the consideration and mitigation of transport impacts is an essential part of Government’s wider policy objectives for sustainable development*”.
- 10.25 The NPS identifies the need for applicants to provide a TA and Travel Plan to be part of the DCO application, produced following consultation with the Highways Agency (now Highways England) and Highways Authorities. Additionally, mitigation measures may be required but are secondary to “*demand management measures*”. It is highlighted that water-borne and rail transport is preferred over road transport at all stages of a project (paragraph 5.13.9), and that HGV traffic is a crucial element to be understood in terms of controlling numbers, and in particular the effects of AIL (paragraph 5.13.11).
- 10.26 A Transport Assessment (TA) has been produced and is contained in *Annex I.1*. A Travel Plan (TP) for the operational phase of the Project is not considered necessary due to the low number of operational trips. A draft Construction Traffic Management Plan (CTMP) has been produced and is contained in *Annex I.2*, this will include demand management measures to mitigate any transport impacts during the construction phase of the Project.

10.27 The National Planning Policy Framework (NPPF) supersedes the previous guidance, the Planning Policy Guidance (PPG) and Planning Policy Statement (PPS) of the Government for planning matters in England since March 2012.

10.28 The NPPF highlights at paragraph 14 that there is a "*presumption in favour of sustainable development*" which is a contiguous key theme in development control.

10.29 Specifically, when considering traffic and travel, Section 4 of the NPPF (paragraphs 29 to 41) considers the promotion of sustainable transport as a vital point in facilitating sustainable development. The Government does, however, highlight at paragraph 29 that "*different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas*".

10.30 All developments that generate significant amounts of movements should be supported by a TA.

10.31 The NPPF states that local authority development plans and decisions allowing development to be granted should be based upon the following points (summarised from paragraph 32):

- that the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site;
- that safe and suitable access to the site can be achieved for all people;
- that improvements can be undertaken within the transport network that cost effectively limit the significance of the development; and
- development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

*Local Policy - Redcar and Cleveland Local Development Framework (July 2007)*

10.32 The Core Strategy and Development Plan set out the framework for the Local Development Framework (LDF). They include strategies for each part of the Borough and policies to help deliver the Council's vision for the Borough. The Core Strategy and Development Plan were both adopted in July 2007.

10.33 The Core Strategy has a number of policies that address transport issues.

- CS26 – Managing Travel Demand.
- CS27 – Improving Accessibility.
- CS28 – Sustainable Transport Networks.

10.34 Policy CS26, Managing Travel Demand, seeks to improve transport choice, minimise the distance people need to travel, contribute positively to a demand

management strategy to address congestion and encourage park and ride at public transport interchanges.

10.35 Policy CS28, Sustainable Transport Networks, seeks to support the development of pedestrian, cycling and equestrian networks.

10.36 The Development Plan Policies relevant to transport include DP3 – Sustainable Design:

*Policy DP3 seeks to 'ensure pedestrian, cycling and public transport access is safe, convenient and attractive, linked to existing networks and includes appropriate facilities for cyclists and public transport users'.*

*Local Policy - Redcar and Cleveland Publication Local Plan (November 2016)*

10.37 RCBC has been preparing the new Local Plan to replace the existing development plan documents. The Council consulted on the Publication Local Plan during December 2016 and January 2017 and has now submitted the Local Plan to the Secretary of State for examination.

10.38 It sets out the long term development strategy for the borough, for a variety of different types of development including housing, employment, retail and town centres, the natural and built environments and transport:

- TA1 – Demand Management Measures.
- TA2 – Travel Plans.
- TA3 – Improving Accessibility within and beyond the Borough.
- TA4 - Sustainable Transport Networks.

10.39 Policy TA1 states that:

*"Plans, strategies and programmes should develop integrated demand management measures to address congestion, environmental and safety issues, which include the contribution of:*

- a. bus lanes and other highway reallocation and management measures;*
- b. park and ride;*
- c. car sharing schemes/car clubs;*
- d. parking standards;*
- e. 'softer' transport policy measures including personalised travel planning, travel awareness campaigns and tele-working, teleconferencing; and*
- f. workplace parking levies."*

10.40 Policy TA2 states that:

*"Development proposals will be required to support the Redcar and Cleveland Local Transport Plan. Proposals will be supported that:*

- a. *improve transport choice and encourage travel to work and school by public transport, cycling and walking;*
- b. *minimise the distance people need to travel;*
- c. *contribute positively to a demand management strategy to address congestion, environmental and safety issues including managing car parking provision and prioritising bus routes in urban areas; and*
- d. *encourage park and ride at public transport interchanges."*

10.41 Policy TA3 states that:

*"The Council will work together with neighbouring authorities, the Tees Valley Combined Authority, Tees Valley Unlimited (the Local Enterprise Partnership), the Government, developers and transport providers to improve accessibility within and beyond the borough, which will support economic, tourism and regeneration objectives for both Redcar and Cleveland and the wider Tees Valley".*

10.42 It will centre on improving *"the A66, A1053 and A174, particularly Greystones roundabout, working in collaboration with the Highways Agency"* and *"bus, pedestrian and cycle links to rail stations across the borough"*.

*Conclusions of Policy Review*

10.43 The above review of the national, regional and local policy indicates that the Project needs to ensure that congestion is minimised and mitigated and that workers need to be encouraged to use public transport and car-sharing where possible.

### **10.1.5 Supporting Information for this Chapter**

10.44 Information, including the results of baseline surveys and other studies are provided in: TA (Mayer Brown; May 2017) as *Annex I.1* to this ES.

## **10.2 ASSESSMENT METHODOLOGY**

### **10.2.1 Introduction**

10.45 To develop the assessment on a worst case basis for each of the two scenarios assessed it has been assumed, based on professional judgement and experienced gained on similar project / sites, that staff will arrive at the site at an average car occupancy level of 2.5 persons per vehicle during the construction phase, the operational phase assumes 90% of staff arrive by car, of which 8% car share and a further 10 % by alternative modes of travel (eg public transport, cycles, coaches or mini-buses).

10.46 Numbers of staff for the Project have been provided by Sembcorp.

## 10.2.2 *The Project Area of influence*

### *Introduction*

10.47 One of the first stages in developing a methodology for a TA is defining the Project's area of influence; namely the area in which effects (be they positive or negative) may occur through the construction, operation and decommissioning of the Project. The ES chapter deals with the construction and operational traffic. It should be noted that decommissioning is not specifically assessed in terms of its quantified impacts as it is considered that effects will be broadly similar to construction and the same mitigation measures would be applied.

## 10.2.3 *Baseline Survey Methodologies*

10.48 Traffic surveys were undertaken for the following junctions:

- A1053/A66/A1053 Westgate Roundabout; and
- A174/A1053/B1300 Greystone Roundabout.

10.49 The results of these surveys enabled review of the existing traffic flows, to determine the percentage impact of the Project on each link, to determine whether it exceeds the thresholds set out below, and hence confirm the area of influence regarding traffic.

## 10.2.4 *Impact Assessment Methodology and Significance Criteria*

10.50 The Institute of Environmental Assessment (IEA) Guidelines <sup>(1)</sup> suggest that assessment of road networks is based upon two broad rules:

- include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%); and
- include any other specifically sensitive areas where traffic flows will increase by 10% or more.

10.51 Where the predicted increase in traffic flows is lower than the thresholds, the guidelines suggest the significance of the effects can be stated to be low or insignificant and further detailed assessments are therefore not warranted.

10.52 In addition, although not specifically identified within the IEA Guidance as being sensitive for these categories of effect, it has been assumed that individual residential properties and employment areas without special characteristics have low sensitivity to the environmental impacts.

(1) Institute of Environmental Assessment Guidance Notes – Guidelines for the Environmental Assessment of Road Traffic (1993) (IEA merged with the Institute of Environmental Management and the Environmental Auditor's Registration Association to form the Institute of Environmental Management and Assessment, IEMA)

10.53 The realistic worst case scenario, when compared to the background general traffic flows, has been used in order to determine which links are most likely to experience impacts. The construction traffic flows compared to the background flows have been calculated and are shown in *Table 10.2*. The table addresses the construction phase for Scenario One, as the numbers of vehicles during this phase are considerably higher than is expected during the operational phase for Scenario One or the construction and operational phase for Scenario Two. The peak hours for the construction phase of Scenario One of the Project fall outside of the local highway network peak hours and therefore comparison has been made between the base annual average daily traffic (AADT) flows and the base with the AADT flows for the construction phase of Scenario One of the Project. The AADT flows have been based on the peak traffic movements throughout the 39 months of construction, which can also be considered worst case.

**Table 10.2** *Area of Influence*

Road Names	Scenario One Construction AADT Flows					
	2021 Base		2021 Base + Scenario One Construction		% Impact	
	HGVs	Tot veh.	HGVs	Tot veh.	HGVs	Tot veh.
A1053 Greystone Road Southbound	399	11533	467	11885	+17.0%	+3.0%
A1053 Greystone Road Northbound	436	5059	504	5410	+15.6%	+7.0%
Westgate Roundabout Approaches	1706	41099	1821	41689	+6.7%	+1.4%
Greystone Roundabout Approaches	1428	61128	1518	61592	+6.3%	+0.8%

10.54 *Table 10.2* indicates that the greatest potential effects of the Project during the Scenario One construction phase (on the realistic assumption that construction will begin during 2021) are going to occur on A1053 Greystone Road, with the northbound total traffic flow increasing by 7% and HGVs increasing by 15.6% and the southbound total traffic flow increasing by 3% and HGVs increasing by 17.0%.

10.55 All of the links considered have increases below the 30% threshold quoted for HGVs and below the 10% threshold quoted for traffic flows in sensitive area within the Institute of Environmental Assessment (IEA) Guidelines <sup>(1)</sup>.

(1) Institute of Environmental Assessment Guidance Notes - Guidelines for the Environmental Assessment of Road Traffic (1993)

## 10.2.5 *Heavy Goods Vehicles and Abnormal Indivisible Loads*

- 10.56 It is predicted that there will be up to 68 HGVs travelling to and from the site daily providing deliveries and collecting materials, during the peak of the construction phase. These will travel to and from the site via the SRN along the A19, A174, A66 and A1053.
- 10.57 AILs from Teesport will be transported primarily via the SRN A66 and A1053 and the local road network Tees Dock Road.
- 10.58 It is expected that there will be up to 70 AILs during the construction phase for Scenario One and up to a total of 70 AILs for Scenario Two with 35 during Phase One and 35 during Phase Two. Abnormal load applications will be made by Sembcorp and/or the contractor at the relevant time. AIL movements are likely to result in temporary road closures on specific sections of highway for short periods to ensure the abnormal loads are able to safely negotiate this route to the Project Site.
- 10.59 Details of the AILs have been provided by Sembcorp and are summarised in *Table 10.3* for Scenario One for construction of the generating station with an output capacity of up to 1,700 MWe CCGT in one phase.

**Table 10.3** *AILs for Scenario One Construction (1,700 MWe CCGT)*

Component	Approximate weight (tonnes) per train	Project total	Approximate delivery month during construction period
H Turbine (per train)	1 x 52t	2	13
E Turbine (per train)	1 x 185t	2	13
Condenser	1 x 122t	2	15
Gas Turbine	1 x 330t	2	13
Gen. Stator	1 x 295t	2	14-16
Gen. Rotor	1 x 56t	2	14-16
Gen. Transformer	1 x 280t	2	14-16
Hp drum	1 x 105t	2	14-16
Boiler modules	21 x (50-106t)	42	15-17
Filterhouse modules	2 x 39t	4	15-18
Diffuser	4 x 8.5t	8	19

## 10.3 *ASSESSMENT CRITERIA*

### 10.3.1 *Assessment Process Overview*

- 10.60 The methodology used is based upon the likely effects of the Project evaluated in accordance with the IEA Guidelines <sup>(1)</sup>.

(1) Institute of Environmental Assessment Guidance Notes - Guidelines for the Environmental Assessment of Road Traffic (1993)



- 10.61 The methodology considers the effects of the Project upon driver delay, accidents and safety, noise and vibration (see *Chapter 8*), pollutant emissions to atmosphere including dust (see *Chapter 7*), pedestrian delay, pedestrian amenity and community severance.
- 10.62 Assessment of the effects is based upon the following:
- baseline traffic flow data for the local highway network provided from traffic counts undertaken by MHC Traffic Ltd in April 2017;
  - details of the local transport infrastructure including bus routes, train stations, walking routes and cycle ways;
  - estimates of traffic generation during construction, operation and decommissioning of the Project;
  - assessment of routes to be used for the transportation of AILs; and
  - capacity assessment of the local highway links.
- 10.63 In terms of the methodology used, the traffic-related effects are based on assessment of the following factors:
- traffic flows;
  - driver delay;
  - pedestrian delay;
  - severance, fear and intimidation;
  - accidents and safety;
  - pedestrian amenity; and
  - hazardous loads (which include AILs).
- 10.64 Significance of effects is determined through an understanding of the sensitivity of a receptor and the anticipated magnitude of impact. The definition of magnitude and sensitivity in the context of the traffic assessment are discussed in more depth below.
- 10.3.2 *Magnitude of Impacts, Traffic Flows***
- 10.65 The Project is expected to result in changes in traffic flow for each of the construction and operation (and decommissioning) periods.
- 10.66 Large changes in traffic flow can have a significant negative effect due to increased congestion, delays and severance. These effects can be particularly noticeable for large increases in HGV traffic flows.
- 10.67 Changes could also have positive effects if traffic flow is reduced on certain links, or if the development is replacing an existing (higher) generator of traffic flows.

10.68 The IEA guidance provides information on how the magnitude of changes in traffic flow should be determined, as shown in *Table 10.4*.

**Table 10.4** *Magnitude of Changes*

<b>Magnitude</b>	<b>Change in total traffic</b>	<b>Description</b>
Negligible	<30%	No discernible change in conditions
Small	30 - 60%	Perceptible change in condition
Medium	60 - 90%	Apparent and noticeable changes to the local conditions
Large	>90%	Considerable change in conditions

**10.3.3** *Delay (Driver and Pedestrian)*

10.69 An increase in delay is a negative effect associated with increases in traffic flows, and can be experienced by both drivers (ie through additional congestion and queuing at junctions) and pedestrians (ie longer waiting times at signalised crossings).

**10.3.4** *Severance, Fear and Intimidation*

10.70 The effects of a project’s traffic upon pedestrians are commonly referred to as severance. An increase in traffic flow can result in severance being experienced by pedestrians or populations separated from their destination by a significant road or traffic artery. Pedestrians may become intimidated and struggle to find gaps in traffic in order to cross the network to their destination; a situation which could be exacerbated by increases in traffic.

**10.3.5** *Road Safety (Accidents and Safety)*

10.71 The alterations in traffic flows may have effects upon the road safety of the local highway network.

10.72 A review of the existing accident locations and severity classes has been made, in order to identify any areas where accidents are concentrated, and whether increased / varied traffic flow changes are likely to exacerbate this.

**10.3.6** *Pedestrian Amenity and Cyclist and Public Transport Accessibility*

10.73 This is defined by the IEA guidelines as the ‘relative pleasantness of a journey’, and can be affected by alterations in traffic flow, particularly increases in HGV traffic.

10.74 The assessment reviews the pedestrian highway network in the vicinity of the Project Site and considers the effects of the Project on pedestrian amenity.

10.75 Assessment of the local highway conditions will be based upon the Institution of Highways and Transportation's (IHT) document "Providing for Journeys on Foot" <sup>(1)</sup>.

10.76 Additionally, the cyclist infrastructure has been assessed within the TA, contained in *Annex I.1*, and consideration given to cycling distances from local centres to the proposed Project Site, based upon the IHT "Cycle-Friendly Infrastructure – Guidelines for Planning and Design" <sup>(2)</sup> and the Department for Transport (DfT) Local Transport Note (LTN) 2/08 regarding "Cycle Infrastructure Design" <sup>(3)</sup>.

### **10.3.7 Hazardous and Abnormal Indivisible Loads**

10.77 Whilst every effort will be made to minimise effects upon the local road network, the transportation of hazardous, bulky and over-sized cargo can be problematic on constrained road networks. A review of the AILs required for the construction of the Project has been undertaken.

### **10.3.8 Receptor Sensitivity**

10.78 Receptor sensitivity is based upon definitions and information provided within the IEA Guidance which lists sites such as schools, hospitals, places of worship and historic buildings.

10.79 These receptors are provisionally reviewed in the evaluation of significance section, to assess whether alterations in traffic flow are likely to affect them.

10.80 Receptor sensitivity can be classified as high, medium or low based on the type of user and the impact of alterations in traffic flows has upon this land use type. Examples of each are shown below:

- low, receptors with some sensitivity to traffic flow, such as: places of worship, public open space, listed buildings and residential areas with adequate footway provision;
- medium, receptors include congested junctions, doctor's surgeries, hospitals, roads with narrow footways and un-segregated cycleways; and
- high, receptors which are affected most by changes in traffic flow include schools, colleges, playgrounds, areas of severe congestion, accident blackspots, retirement centres and areas with poor pedestrian separation from roads.

(1) Institute of Highways and Transportation – "Providing for Journeys on Foot" (2000)

(2) Institute of Highways and Transportation – "Cycle-Friendly Infrastructure – Guidelines for Planning and Design" (1996)

(3) Department for Transport – Local Transport Note 2/08 – "Cycle Infrastructure Design" (2008)

### 10.3.9 *Evaluation of Significance*

10.81 The evaluation of significance of effects involves the assessment of development-induced changes in traffic flows against baseline flows and professional judgement. Magnitude and sensitivity are considered in combination to evaluate whether an effect is, or is not significant and, if so, its degree of significance (defined in terms of Minor, Moderate or Major). The process is shown in *Table 10.5*.

**Table 10.5** *Assessing the Significance of Effects*

Magnitude of Impact	Sensitivity of Receptor		
	Low	Medium	High
Small	Minor	Minor	Moderate
Medium	Minor	Moderate	Major
Large	Moderate	Major	Major

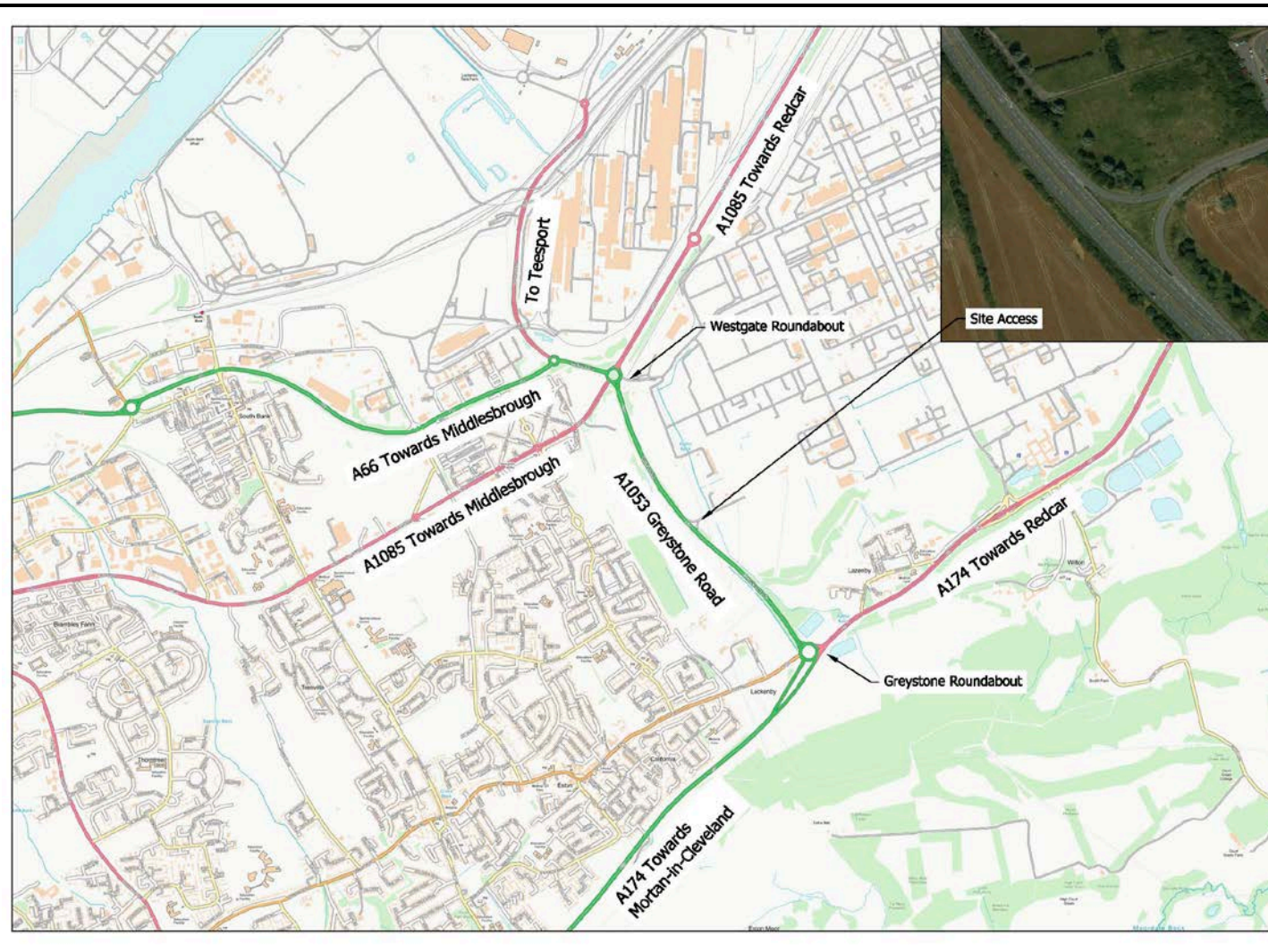
10.82 The effects considered as significant within the IEA Guidance are those of moderate or major significance. As an example an effect of moderate significance would be suggested when a receptor of low sensitivity experiences an impact of large magnitude.

## 10.4 *BASELINE CONDITIONS*

### 10.4.1 *Introduction*

10.83 The Project Site was visited on Thursday 13th April 2017, in order to understand the operation of the local highway network and the accessibility of the Project Site by all modes of transport. The Project site's location, proposed access route and immediate environs in terms of traffic is shown in *Figure 10.1* below.

Figure 10.1 Project Site Context and Access



10.84 The information provided in this assessment is from a number of sources:

- traffic surveys undertaken by MHC Traffic Ltd in April 2017; and
- personal injury accident data provided by RCBC.

10.85 Where appropriate, the assessment has also been undertaken by qualitative means, as explained within the methodology section.

#### 10.4.2 *Baseline Traffic Flows*

##### *Observed Traffic Flows*

10.86 Traffic data were collected for the following junction locations:

- A1053/A66/A1053 Westgate Roundabout; and
- A174/A1053/B1300 Greystone Roundabout.

10.87 The manual classified turning count surveys were undertaken on Tuesday 4<sup>th</sup> April for the AM Peak period (07:00-10:00) and PM Peak period (16:30-19:30).

10.88 The results of the traffic surveys identified the following peak hours:

- AM Peak hour 07:30-08:30; and
- PM Peak hour 16:30-17:30.

10.89 The full 2017 survey data are contained within the TA in *Annex I.1*.

##### *Baseline Traffic Flows*

10.90 The 2017 baseline flows have been factored using TEMPro local growth factors to present the base traffic flows for the worst case for Scenario One and the worst case for Scenario Two. The TEMPro software (Trip End Model Presentation Program) allows users to view travel forecasts from the National Trip End Model (NTEM) datasets in order to obtain local growth factors:

- 2021 Scenario One - construction; and
- 2029 for Scenario Two - first CCGT operational and construction of second CCGT.

10.91 Traffic flows for the AM and PM peak hours and AADT are provided within the TA in *Annex I.1* and shown in *Table 10.6*.

**Table 10.6** *2021 and 2029 Base Traffic Flows - AADT*

Link	Scenario One (Construction) 2021 Base Traffic - AADT		Scenario Two (First CCGT Operational, second CCGT Construction) 2029 Base Traffic - AADT	
	Total Vehicle	HGVs	Total Vehicle	HGVs

Link	Scenario One (Construction) 2021 Base Traffic - AADT		Scenario Two (First CCGT Operational, second CCGT Construction) 2029 Base Traffic - AADT	
	A1053 Greystone Road Southbound	11533	399	12259
A1053 Greystone Road Northbound	5059	436	5377	463
Westgate Roundabout Approaches Total Flow	41099	1706	43683	1814
Greystone Roundabout Approaches Total Flow	61128	1428	64972	1518

#### 10.4.3 *Accessibility by Pedestrians and Cyclists*

10.92 There are no existing footways or cycleways located along the A1053 Greystone Road in the vicinity of the Project Site.

10.93 There are existing footway/cycleways and crossing facilities at the Greystone Roundabout to the north of the Project Site and along A1085 Trunk Road (North). The footway/cycleway links into the main Wilton International site access from the roundabout, from there the footway/cycleway crosses the A1053 and continues along the A1085 Trunk Road (North) to the west where the cycleway continues on road providing access to the residential areas of Grangetown and Leesville and on to North Ormesby.

10.94 There is an existing footway/cycleway along the A174 (east) that provides access to the residential area of Lazenby and onto Redcar.

10.95 The Project will consider the provision of a shuttle bus link to transfer pedestrians and cyclists arriving at the Wilton International main access to the Project Site, thus providing a connection with the bus routes along the A1085 Trunk Road (North).

#### 10.4.4 *Accessibility by Bus*

10.96 The nearest bus stop to the Project Site is located on the A1085 Trunk Road (North). There are bus shelters and timetabling information provided but no seating.

10.97 There are four services that stop at the A1085 Trunk Road (North) bus stops, these are services 62 and 62a and 64 and 64a. There is a further bus stop that provides access to the Wilton International site located off the A174 (East) to the southeast of the site, one service stops at this location, service 63.

10.98 A summary of the frequency of bus services stopping near the Project Site are set out in *Table 10.7*.

**Table 10.7** *Bus Services Stopping near Site*

Number	Route	Monday - Friday		Saturday	Sunday
		Peak Hours	Off Peak		
62/62a	Middlesbrough to New Marske	30 mins	30 mins	30 mins	60 mins
63	Middlesbrough to Redcar	10 mins	10 mins	10 mins	20 mins
64/64a	Middlesbrough to Eston/Redcar Ings Farm	30 mins	30 mins	30 mins	60 mins (No Service stopping at Grangetown)

#### 10.4.5 *Accessibility by Rail*

10.99 South Bank Rail Station is located to the northwest of the Project Site, approximately 2.8 km from the Westgate Roundabout. The trains are operated by Northern and provide services between Darlington, Bishop Auckland and Saltburn.

#### 10.4.6 *Public Transport Conclusion*

10.100 It can be concluded that there is scope for travel by public transport to the Project Site.

#### 10.4.7 *Accident Analysis*

10.101 Personal Injury Accident data have been obtained from Highway England (HE) for the area surrounding the route into the Project Site for a five year period from March 2010 to January 2015. The assessed area comprises the A1053 Greystone Road, the A174, the Greystone Roundabout, the Westgate Roundabout and the A66. A copy of the accident data is provided in Appendix D of the TA contained in *Annex I.1* of this ES.

10.102 A total of 41 accidents were recorded in the area and time period assessed, these involved 37 slight, two serious and two fatal. Further details of the accidents are provided in section 8 of the TA contained in *Annex I.1* of this ES.

10.103 The analysis of the accident data for the nearby area indicates that there is no pattern of accidents, with the exception of driver error, or fundamental reason for the accidents that have occurred in the vicinity of the Project Site.

#### 10.4.8 *Sensitive Receptors*

10.104 In order to establish the sensitive receptors surrounding the Project Site, a desktop study was undertaken, examining local area mapping. In addition



information was gained from the site visit, especially with consideration to the routes that will be taken by construction and operational traffic.

10.105 There are a number of local primary schools in the vicinity of the Project Site, none of which are accessed directly from the routes that will be taken by both operational and construction phase traffic. It has therefore been concluded that there are no receptors sensitive to the change in traffic flows on the SRN.

#### **10.4.9 *Conclusion on Existing Traffic Conditions***

10.106 Traffic counts have been undertaken on key road links surrounding the Project Site, to determine the area of influence of the Project. Flows have been summarised for the network and development peak hours, as well as the full daily flows.

10.107 There is scope for travel to and from the Project Site by non-car modes for construction and operational staff trips. However, given the shift patterns and the proximity of these services, it is expected that in reality the majority of such trips will be by car.

10.108 Accident data have been reviewed. The analysis of the accident data for the nearby area indicates that there is no pattern of accidents, with the exception of driver error, or fundamental reason for the accidents that have occurred in the vicinity of the site. As indicated in section 6 of the TA, the Project will not have a significant impact on the local highway network during the operational phase and any impact during the construction phase will be of a temporary nature. Therefore, it can be concluded that the Project will not affect highway safety in the vicinity of the site.

10.109 There are no sensitive receptors in the vicinity of the Project, which potentially could be affected by either construction or operational traffic.

#### **10.4.10 *Future Traffic***

10.110 In the future traffic levels are likely to increase under various influences on the basis that the local and national economies grow and vehicle ownership and use grow at least at the same rate as population. The changes in the baseline of most relevance to the Project are those that could occur during the construction phase as operational vehicle movements are negligible. Changes in traffic levels over the next few years coincident with construction are accounted for in the methodology of this assessment and use of TEMPro growth factors.

### **10.5 *ASSESSMENT OF IMPACTS AND EFFECTS***

#### **10.5.1 *Introduction***

10.111 The purpose of the following section is to identify probable effects with provisional mitigation measures suggested to limit the impacts.

- 10.112 This section focuses on the worst case in terms of traffic generation for both the Project scenarios being considered. These are:
- Scenario One – construction (peak impact will occur in 2021);
  - Scenario One – operation – (year of opening is 2023);
  - Scenario Two – first CCGT operational, construction of second CCGT (peak impact will occur in 2029); and
  - Scenario Two – first and second CCGTs operational (second CCGT year of opening is 2031).

10.113 The construction and operation trips have been distributed onto the local highway network based on observed turning proportions at the Westgate and Greystone Roundabouts.

10.114 As stated in *Section 10.2.2* it should be noted that decommissioning is not specifically assessed in terms of its quantified impacts as it is considered that effects will be broadly similar to construction and the same mitigation measures would be applied.

## 10.5.2 *Assessment of Effects during Construction*

### *Scenario One Construction*

10.115 Construction will last for approximately 39 months. It is therefore reasonable to assume that any transport impact associated with the construction phase will be for a temporary period only. This is shown in *Table 10.8*

10.116 The number of HGV movements associated with the construction will peak at 68 two-way movements per day over the 39 month period.

10.117 Numbers of construction workers will vary throughout the Project based upon the current construction phase/activity, peaking in Month 20 at around 945 workers on site at any one time.

10.118 Construction worker travel is largely expected to be by car/van with a majority likely to be vehicle sharing due to workers generally operating in 'teams', thus reducing associated trips. Therefore, based upon typical levels of vehicle sharing (2.5 workers per vehicle, as agreed with Highways England) it is envisaged that construction is predicted to attract around 340 construction staff trips per day during the peak construction periods. This is likely to result in no additional staff trips during the network peak hours.

10.119 The construction staff will work 12 hour shifts between the hours of 07:00-19:00, and therefore should not be arriving and departing from the Project Site during the observed local network AM and PM peak hours.

**Table 10.8 Scenario One Construction Traffic**

		AADT (00:00-24:00)		
		Arrivals	Departures	Total
Scenario One	Construction Staff	340	340	680
Construction	Construction HGVs	68	68	136

10.120 The Project traffic flows have been distributed based on existing turning proportions at the Westgate Roundabout and Greystone Roundabout, as shown in the TA at *Annex I.1*.

*Scenario Two – Second CCGT under Construction, First CCGT Operational*

10.121 The construction phase for the second CCGT will generate the same level of construction workers, vehicle trips and HGV trips as the first CCGT. The construction will last for approximately 39 months and it is therefore reasonable to assume that any transport impact associated with the construction phase will be for a temporary period only. This is shown in *Table 10.9*.

10.122 The number of HGV movements associated with the construction will peak at 34 two-way movements per day over the 39 month period.

10.123 Numbers of construction workers, as previously stated, will vary throughout the Project based upon the current construction phase/activity, peaking at around 630 workers on site at any one time. Equating to around 227 construction staff vehicular two-way trips per day during the peak construction periods.

10.124 The construction of the second CCGT needs to be considered alongside the operation of the first CCGT as this will result in the highest level of trip generation for the Project set out in Scenario Two.

10.125 The first CCGT will result in 46 operational staff at the site on an average weekday. Again, staff working 12 hour shifts will not all be arriving to and departing from the site during the observed AM (07:30-08:30) and PM (16:30-17:30) peak hours. The day staff will work an eight hour day, starting at 09:00 and finishing at 17:00. The daily staff will comprise 38 staff working an 8 hour day shift (09:00-17:00) and four staff working a starting at 07:00 and finishing at 19:00 and four staff working a 12 hour night shift starting at 19:00 and finishing at 07:00.

10.126 Based on census data for the local area 90% of the operational staff are predicted to arrive by car, with 8% car sharing, equating to an additional 38 daily two-way car trips and 31 additional car trips are predicted to depart from the site during the observed PM peak hour.

10.127 Therefore, the predicted total trip generation, for the construction of the second CCGT with the first CCGT operational, for an average day would be

34 daily two-way HGV trips, 227 daily two-way construction staff trips and 38 daily two-way operational staff trips per day.

**Table 10.9 Scenario Two Phase 2 - Total Traffic**

		AADT (00:00-24:00)		
		Arrivals	Departures	Total
Scenario Two Phase 2 2 <sup>nd</sup> CCGT construction with Phase 1 in operation	Construction Staff	227	227	545
	Operational Staff	38	38	76
	<b>TOTAL Staff</b>	<b>265</b>	<b>265</b>	<b>621</b>
	Construction HGVs	34	34	68
	Operational HGVs	1	1	2
	<b>TOTAL HGVs</b>	<b>35</b>	<b>35</b>	<b>70</b>

### 10.5.3 Assessment of Effects during Operation

#### Scenario One – Operational

10.128 It is anticipated that once operational Scenario One will result in 48 operational staff at the site on an average weekday. Staff working 12 hour shifts will not all be arriving to and departing from the site during the observed AM (07:30-08:30) and PM (16:30-17:30) peak hours. The day staff will work an eight hour day, starting at 09:00 and finishing at 17:00. Therefore, for this assessment, it has been assumed that no day staff arrive during the observed AM peak but all day staff will depart during the observed PM peak. The daily staff will comprise 38 staff working an eight hour day shift (09:00-17:00) and five staff working a 12 hour day shift starting at 07:00 and finishing at 19:00 and five staff working a 12 hour night shift starting at 19:00 and finishing at 07:00). This scenario is shown in *Table 10.10*

10.129 Based on census data for the local area 90% of the staff are predicted to arrive by car, this includes 8% car sharing, equating to an additional 39 daily two-way car trips, of which none are predicted to arrive at the site during the observed AM peak hour and 31 additional car trips departing during the PM peak.

**Table 10.10 Scenario One Operational Traffic**

		AADT (00:00-24:00)		
		Arrivals	Departures	Total
Scenario One	Operational Staff	39	39	78
	Operational HGVs	1	1	2

#### Scenario Two - First and Second CCGT Operational

10.130 Scenario Two with both first and second CCGTs in operation would generate the same level of trip generation as for Scenario One operation as the overall size of the Project is the same once both CCGTs are in operation.

10.131 It can be seen from the tables that the construction phase for Scenario One results in the greatest level of trip generation overall, therefore for this assessment the traffic impact from Scenario One construction only will be assessed further, though the mitigation measures employed for both Scenario One and Scenario Two would be the same.

#### 10.5.4 *Analysis of Construction Traffic Impact*

10.132 Table 10.11 sets out the change in AADT traffic flows for Scenario One construction.

**Table 10.11 Scenario One - Construction - Worst Case Construction Impact - AADT**

Link	Scenario One Construction Impact					
	2021 Base AADT		2021 Scenario One Project AADT		% Impact	
	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs
A1053 Greystone Road Southbound	11533	399	408	68	+3.5%	+17.0%
A1053 Greystone Road Northbound	5059	436	408	68	+8.1%	+15.6%
Westgate Roundabout Approaches	41099	1706	686	114	+1.7%	+6.7%
Greystone Roundabout Approaches	61128	1428	539	90	+0.9%	+6.3%

10.133 The results demonstrate that averaged across the day, the Project will have a negligible impact in terms of construction traffic (<30% increase in traffic and HGVs) and therefore will result in no significant effects.

#### 10.5.5 *Mitigation Measures - Construction Phase*

10.134 The proposed shift patterns for the site ensure that staff will be travelling outside of the network peak hours, which will minimise any potential impacts on highway capacity. There is sufficient capacity within the existing roads to accommodate the staff traffic, in both construction and operational phases, and also the HGV traffic.

10.135 A draft CTMP (see Annex I.2) has been prepared for the Project and will be updated at the appropriate time by the construction contractor. This includes measures such as:

- construction staff parking arrangements;
- encouraging car sharing, and the use of minibuses;
- construction working hours, including any restriction to deliveries;

- wheel washing and dust control; and
- contact details for construction contractor for any problems to be reported.

10.136 The CTMP will assist in reducing the impact of the Project on the SRN, as well as ensuring that the contractors are aware of their responsibilities and any constraints upon their travel.

10.137 When the AILs are to be transported to the site, an abnormal loads movement application will be made to HE, by either the contractor or the haulier as appropriate. Temporary road closures may need to be put in place on local roads along the haulage route, and Sembcorp will ensure that local residents (and businesses) are kept informed about these closures and movements. Street furniture, such as lighting columns or telegraph poles, may need to be removed temporarily, and alterations to kerb lines may be required to accommodate the swept paths of the required oversized vehicles.

#### 10.5.6 *Residual Effects - Construction Phase*

10.138 Any impacts associated with the construction phase of the Project will be of a temporary nature and therefore the construction phase of both Scenario One and Scenario Two is considered to have no significant residual effects.

#### 10.5.7 *Analysis of Operational Traffic Impact*

Table 10.12 sets out the change in AADT traffic flows for Scenario One in operation.

**Table 10.12 Scenario One - Operational Impact - AADT**

Link	Scenario One Operational Impact					
	2023 Base AADT		2023 Scenario One Operational AADT		% Impact	
	Tot Veh	HGVs	Tot Veh	HGVs	Tot Veh	HGVs
A1053 Greystone Road Southbound	11696	405	40	1	+0.3%	+0.2%
A1053 Greystone Road Northbound	5130	442	40	1	+0.8%	+0.2%
Westgate Roundabout Approaches	41679	1730	68	2	+0.2%	+0.1%
Greystone Roundabout Approaches	61991	1448	53	1	+0.1%	+0.1%

10.139 The results demonstrate that averaged across the day, the Project will have a negligible impact in terms of operational traffic (<30% increase in traffic and HGVs) and therefore will have no significant effects.

10.140 As the change in traffic during operation is below 30%, the magnitude of change is considered to be negligible and therefore does not warrant further consideration.

#### **10.5.8 *Mitigation Measures - Operational Phase***

10.141 No specific mitigation measures have been identified as necessary as a result of the Project.

#### **10.5.9 *Residual Effects - Operational Phase***

10.142 No significant residual effects have been identified.

#### **10.5.10 *Assessment of Effects during Decommissioning***

10.143 The Project has a life span of 25 years for each of the CCGT being constructed. At the end of the 25 year period each CCGT will need to go through a decommissioning process. Sembcorp have advised that the decommissioning period is likely to result in a similar number of vehicular trips for both construction workers and HGVs as for the construction periods.

10.144 Therefore, it can be concluded that averaged across the day, the Project will have a negligible environmental impact in terms of traffic for the decommissioning phase (<30% increase in traffic and HGVs) and therefore does not warrant further consideration.

#### **10.5.11 *Cumulative Effects***

10.145 Cumulative development sites have been screened as having the potential for cumulative effects in combination with the Project. Table 7.1 in Appendix C of the TA (Mayer Brown; May 2017), included in *Annex I.1* to this ES, details the development sites considered and their potential impact on the cumulative effects in combination with the Project.

10.146 Thirty-five development sites have been identified and five have been classed as having the potential to contribute to cumulative effects of the Project. Three of the development sites are residential developments and have therefore been allowed for by applying a TEMPro growth factor to the baseline traffic flows based on the travel forecasts from the National Trip End Model (NTEM) dataset, the fourth is the construction of a PET chemical plant and the fifth is the York Potash Project, both of which could have a temporary cumulative impact during their construction periods if these occur at the same time as the proposed Project.

10.147 Both Highways England and NYCC have recommended that the Project should co-ordinate with other major construction projects in the area, particularly during the construction phase.

10.148 Highways England have made reference (in the technical review of the TA undertaken by ch2m, included in Appendix of the TA which is included as

*Annex I.1*) to the nearby Chemical PET Plant proposals and NYMPA have made reference to the York Potash Project and both recommend that further information relating to these developments are included within the assessment as it is considered that they could have cumulative impacts during the construction phase.

10.149 The Traffic and Transport Report for the Lotte LC1 PET Plant prepared on behalf of Lotte Chemical UK Limited has been reviewed and this concludes that there will be a negligible increase in trips and any significant increases in traffic will occur outside of the local normal peak traffic flows. There are no traffic flow diagrams detailing the predicted traffic flows within the Lotte LC1 Plant report. The report also states that the additional development flows would take place outside of peak network times. During construction, there is estimated to be eight HGV movements per day increasing up to a maximum of 18 during the peak delivery months, between June-July 2012 and the first quarter of 2013. Obviously, these dates have now passed so it would be difficult to predict when the construction would take place in order to ascertain how it could affect the Sembcorp Project proposals.

10.150 The York Potash Project Transport Assessment, prepared by Royal Haskoning DHV, dated 15<sup>th</sup> February 2015, has been reviewed and it can be concluded that this development will have minimal impact on the proposed CCGT Project during its construction phase. The York Potash Project is currently under construction and is due to be completed in 2020 and will therefore not be undergoing construction at the same time as the proposed CCGT Project.

10.151 To address the above programming uncertainty Sembcorp will seek to coordinate with the proponent of these schemes and the local highway officers prior to the start of Project construction to co-ordinate delivery so that any cumulative impacts as a result of the construction traffic are minimised. This approach has been discussed and agreed with Highways England.

#### **10.5.12 *Uncertainty***

10.152 The data relating to the number of staff and deliveries, both construction and operational, for both scenarios could be considered as an uncertainty within this assessment since ultimately these will be determined following the appointment of a construction contractor. However, the staff and delivery figure estimates have been arrived at on the basis of realistic worst case assumptions based on professional judgement and experienced gained on similar Projects (see *Section 10.2.1*) and so the assessment is robust to a reasonable level of uncertainty.

#### **10.5.13 *Summary of Mitigation Measures and Residual Significance of Effects***

10.153 *Table 10.13* summarises the impacts where, either due to the potential significance of effects or requirements to comply with legislation, mitigation will be required. The mitigation is described and the significance of the residual effect after mitigation applied is assessed.



**Table 10.13 Mitigation and Residual Effects**

<b>Phase</b>	<b>Receptor and Impacts</b>	<b>Mitigation Measures</b>	<b>Residual Significance</b>
Construction	Increased traffic flows on A1053,A66,A174	All traffic to use the Strategic Road Network where possible; shifts start and end outside peak periods Construction Traffic Management Plan	Negligible impacts. Temporary not significant effect
Construction	Increased HGV traffic on A1053, A66, A174, A19.	Construction Traffic Management Plan	Negligible impacts. Temporary not significant effect
Abnormal Indivisible Loads	AILs on Tees Dock Road, A66, A1053. Obstruction for normal vehicles. Impacts upon local junctions and possible requirements for street furniture removal. Possible disruption to residents through temporary road closures.	Abnormal load routing to be agreed through formal AIL application.  Travel of AILs off-peak Advance notification to local residents and businesses	Negligible impacts. Temporary not significant effect.

## 10.6 CONCLUSIONS

- 10.154 This chapter on traffic and transport impacts of the Project has demonstrated that the Project, during both construction and operational phases for both Scenario One and Scenario Two, will result in no significant effects on the local and Strategic Road Network and their users.
- 10.155 The impact on daily traffic flows would be less than 30% for both scenarios assessed, both during construction and operational phases. Impacts on the Greystone and Westgate roundabouts would be less than 10% for both scenarios. The percentage increase of HGVs would only exceed 10% on the A1053 Greystone Road for the peak construction phase of Scenario One, which considers the single construction phase of a generating station with a capacity of up to 1,700 MWe CCGT. This road is part of the strategic road network and designed to carry large volumes of traffic and HGVs. Impacts during the construction stage would be temporary.
- 10.156 As previously noted, the traffic associated with all scenarios will generally occur outside of the network peak hours.
- 10.157 A separate TA has been produced by Mayer Brown Limited and this forms *Annex I.1* to this ES.