

# **SHE Transmission**

## **St Fergus Gas 132/11 kV Substation**

### **Environmental Appraisal**

**September 2020**



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## LIST OF ABBREVIATIONS

ACAS	Aberdeenshire Council Archaeology Service
AOD	Above Ordnance Datum
BGS	British Geological Survey
BTO	British Trust for Ornithology
CAR	Controlled Activity Regulation
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists
CIRIA	Construction Industry Research and Information Association
CSE	Cable Sealing End
EA	Environmental Appraisal
ECoW	Ecological Clerk of Works
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
FRA	Flood Risk Assessment
GEMP	General Environmental Management Plan
GIS	Geographic Information System
GPP	Guidance for Pollution Prevention
GPS	Global Positioning System
GVLIA3	Guidelines for Landscape and Visual Impact Assessment 3rd Edition
GWDTE	Groundwater Dependent Terrestrial Ecosystems
ha	Hectare
HES	Historic Environment Scotland
kV	Kilovolt
LBAP	Local Biodiversity Action Plans
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LVIA	Landscape and Visual Impact Assessment
NVC	National Vegetation Classification
OS	Ordnance Survey
PAN	Proposal of Application Notice
PANs	Planning Advice Notes
PPG	Pollution Prevention Guidance
PWS	Private Water Supply
RSPB	Royal Society for the Protection of Birds
SAC	Special Areas of Conservation
SEPA	Scottish Environment Protection Agency
SM	Scheduled Monument
SMR	Sites and Monuments Record
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Species Protection Plan
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
UKBAP	UK Biodiversity Action Plans
WFD	Water Framework Directive
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

## 1. INTRODUCTION

### 1.1 Background to the Project

- 1.1.1 Scottish Hydro Electric Transmission plc (subsequently referred to as “SHE Transmission”) holds a licence under the Electricity Act 1989 for the transmission of electricity in the North of Scotland and has a statutory duty under Schedule 9 of the Electricity Act to develop and maintain an efficient, co-ordinated and economical electrical transmission system in its licence area.
- 1.1.2 SHE Transmission is putting forward a proposal to install a new substation near the St Fergus Gas Terminal to replace the 132/11 kV transformers within the current substation. This is in order to provide reinforcement of the existing network.

### 1.2 Consent Requirements

- 1.2.1 Consent for construction and operation of the substation is being sought by way of a planning application to Aberdeenshire Council under the Town and Country Planning (Scotland) Act 1997 (as amended).
- 1.2.2 Consent for the installation of a 132 kV Cable Sealing End (CSE) Compound and temporary diversion of the existing overhead line is being sought under Section 37 of the Electricity Act 1989.

### 1.3 The Project

- 1.3.1 The location of the Project site is shown in Figure 1.1. The proposed Project components subject to consent under the Town and Country Planning (Scotland) Act 1997 are as follows.

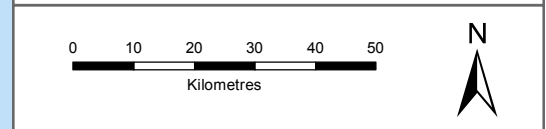
- Two grid transformers to be housed within a new substation building;
- A control building;
- Formation of a new access; and
- Temporary site compound and construction laydown area.

- 1.3.2 The proposed Project components subject to consent under the Electricity Act 1989 are as follows.

- Modification of the existing overhead line (OHL);
- Installation of new terminal OHL tower and CSE compound;
- Temporary access along a route to be determined by the Principal Contractor at detailed design stage;
- Temporary work areas to the south on the substation site, in the same field; and
- Installation of temporary overhead line for diversion of existing OHL.

- 1.3.3 Development associated with the works to be completed as permitted development are as follows.

- Installation of two underground cables from the CSE compound to the proposed substation.



SCALE: See Scale Bar  
 SHEET: A4  
 PROJECT: 0478671  
 DATE: 13/09/2019

VERSION: A01  
 DRAWN: WB  
 CHECKED: KG  
 APPROVED: KG

**Figure 1.1**  
**St. Fergus Gas 132/11kV**  
**Substation Site Location**



PROJECTION: British National Grid

## 1.4 Environmental Appraisal

- 1.4.1 SHE Transmission recognises that the proposed development has the potential for effects on the environment. As such, a number of environmental studies have been carried out, the results of which are detailed in this Environmental Appraisal (EA).
- 1.4.2 A formal request for an Environmental Impact Assessment (EIA) Screening Opinion under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 was submitted to both the Energy Consent Unit and Aberdeenshire Council. A response was received from Aberdeenshire Council on 17 January 2019 and the Energy Consent Unit on 11 April 2019, stating that EIA of the project was not required.
- 1.4.3 This EA considers the potential for environmental effects associated with the construction and operation of the overhead line, substation and CSE Compound and is intended to accompany the two consent applications. The works are considered as one to enable consideration of any potential cumulative effects.

## 1.5 Environmental Appraisal Methodology

- 1.5.1 The EA, whilst not a formal Environmental Impact Assessment (EIA) in accordance with applicable EIA legislation, has followed a similar approach of identifying the sensitivity of the receiving environment, evaluating the impact of change or effect that the Project might have and the subsequent importance of this effect or change on the receiving environment. An illustration of the assessment matrix is shown in Table 1.1.
- 1.5.2 Sensitivity may be biological, cultural, physical or human and refers to the capacity for a change. Where the resource is physical (for example, a water body) its quality, sensitivity to change and importance (on a local, national and international scale) are considered. Where the resource/receptor is biological or cultural (for example, a bird population), its importance (for example, its local, regional, national, or international importance) and its sensitivity to the specific type of impact are considered. Where the receptor is human, the vulnerability of the individual, community or wider societal group is considered.
- 1.5.3 Magnitude describes the degree of change that the impact is likely to have upon the resource/receptor and is a function of the following impact characteristics:
- Extent
  - Duration
  - Scale
  - Frequency
  - Likelihood (for unplanned events only)

**Table 1.1 Environmental Appraisal Matrix <sup>(1)</sup>**

		Sensitivity of Receptor/Receiving Environment to Change/Effect			
		High	Medium	Low	Negligible
Magnitude of Change/Effect	High	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

<sup>(1)</sup> This is the standard SHE Transmission approach as applied on all projects

## 1.6 Consultation

- 1.6.1 Under the Hierarchy Regulations, there is a legal requirement for all National and Major developments to consult with the public through pre-application consultations to inform local communities and interested members of the public about a proposed development.
- 1.6.2 SHE Transmission organised a public exhibition to allow members of the public to obtain information and pass comments upon the Proposed Development. The exhibition was advertised in accordance with the guidelines as set out in the Hierarchy Regulations.
- 1.6.3 The public exhibition was held at St Fergus Village Hall on 16th May 2019. Details of this exhibition event, and other pre-application consultations, are included in a Pre-Application Consultation Report which accompanies the planning application.
- 1.6.4 In January 2019, SNH was consulted on the Project including the proposed scope and duration of Vantage Point (VP) bird surveys. It was agreed that six months of VP surveys would be undertaken.
- 1.6.5 In April 2019, Aberdeenshire Council was contacted regarding the scope of the proposed breeding bird survey and were satisfied with the proposed scope.
- 1.6.6 In May 2019, Aberdeenshire Council was consulted on the scope of the proposed landscape and visual impact assessment and were satisfied with the proposed scope.
- 1.6.7 In January 2020, SNH was consulted in relation to bird diverters on the temporary overhead line diversion. SHE Transmission presented the reasons why the Project did not intend to use bird diverters. These include risks to programme and electricity supply to the Gas Terminal plus the low risk of bird collision over the short period the temporary overhead line will be in place.
- 1.6.8 In April 2020, SEPA was consulted on the revised Flood Risk Assessment and confirmed a position of no objection to the proposed development on flood risk grounds.

## 1.7 Cumulative Impacts

- 1.7.1 No National or Major developments within 5 km within 2 km respectively consented or submitted for approval in the last three years have been identified. As such consideration of cumulative impacts are scoped out of this appraisal.

## 1.8 Structure of the Environmental Appraisal

- 1.8.1 The EA is structured as follows:
- Chapter 2 - Proposed project
  - Chapter 3 - Appraisal of environmental effects
  - Chapter 4 - Proposed mitigation
- 1.8.2 The following supporting information is provided in the following appendices.
- Annex A: Photomontages
  - Annex B.1: Extended Phase 1 Survey
  - Annex B.2: Breeding Bird Survey
  - Annex B.3: Winter Vantage Point Survey summary
  - Annex B.4: Bird Species Protection Plan
  - Annex B.5: Badger Species Protection Plan
  - Annex C: Cultural Heritage Desk Based Assessment and Site Gazetteer
  - Annex D: Flood Risk Assessment
  - Annex E: Noise Assessment

- Annex F: General Environmental Management Plan (GEMPs)



## 2. THE PROPOSED PROJECT

### 2.1 Introduction

- 2.1.1 This Chapter describes the elements that constitute the St. Fergus Gas 132/11 kV Substation Project. It provides a description of the development and information regarding construction, operation and maintenance.
- 2.1.2 SHE Transmission propose to build a new substation near the existing St Fergus Gas Terminal, in Buchan north Aberdeenshire, with overhead lines (OHL) diversion works to tie in existing transmission lines in order to provide reinforcement of the existing network.
- 2.1.3 The site is near to the village of St. Fergus, approximately 65 km north of Aberdeen, 11 km north of Peterhead. The North Sea coastline lies approximately 1.5 km to the east of St. Fergus. The proposed Project is located to the west of the St. Fergus Gas Terminal and east of the A90. Aberdeenshire Council is the Local Authority.

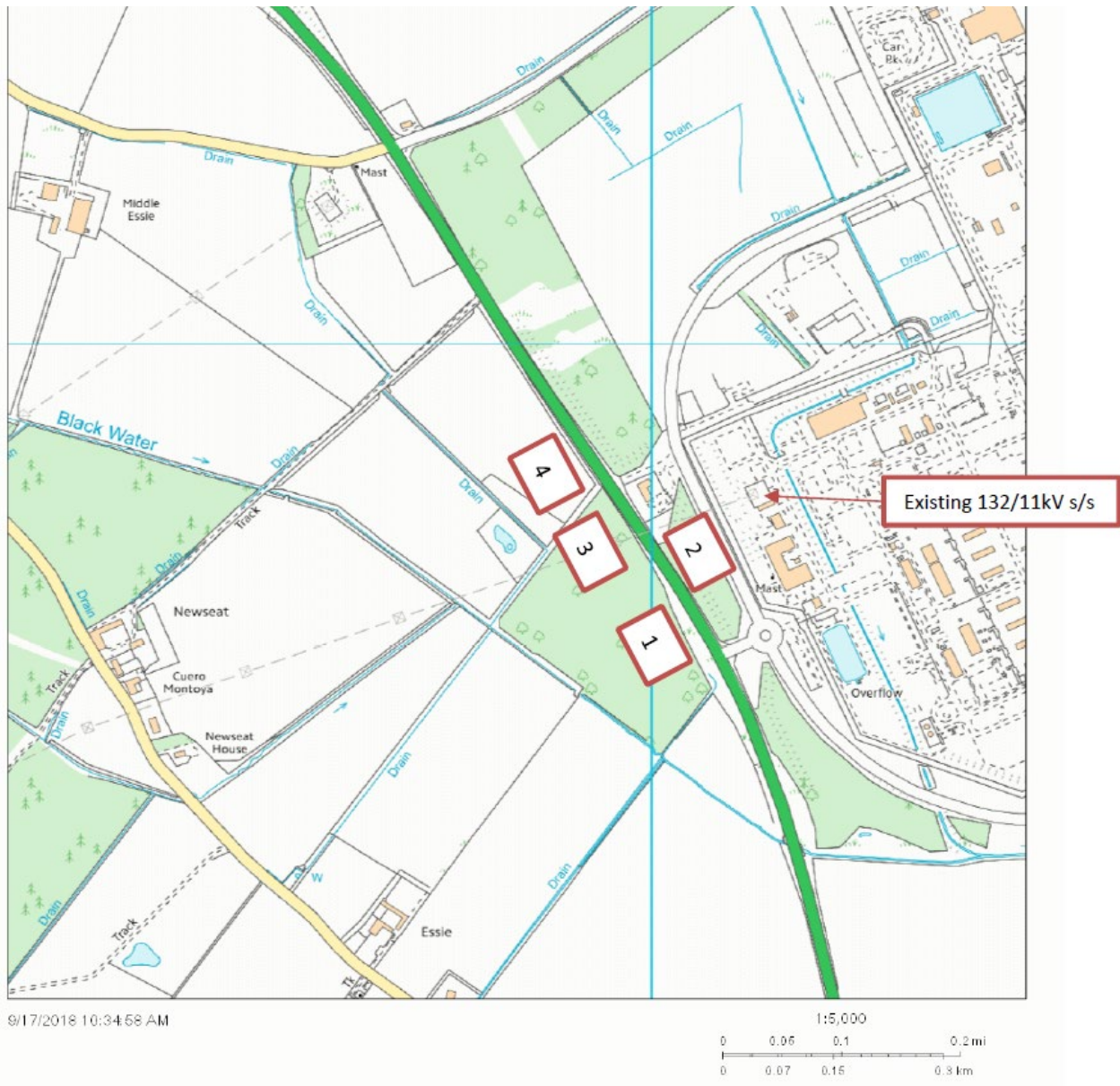
### 2.2 Alternatives

- 2.2.1 A total of four potential sites were identified based on a requirement to build the new substation close to the existing transmission network. Potential sites are illustrated on Figure 2.1.
- 2.2.2 An appraisal of technical, operational, health and safety, economic and environmental and land acquisition factors was undertaken. Site four performed comparatively well for all factors and was selected as the preferred option. Key benefits of site four include the shorter duration for construction, minimal loss of woodland and minimal potential for impacts on fauna. Site 4 was subsequently moved northwards to avoid an area of marshy grassland to further reduce potential impacts.

### 2.3 Project Description

- 2.3.1 Plans and elevations of the proposed development are provided in Figures 2.2 and 2.3.
- 2.3.2 The substation compound will include two transformer buildings 21 m wide by 39 m long with a ridge height of 10.6 m. There will be a separate control building 18 m by 14 m long with a ridge height of 5.5 m. The buildings will be clad with steel panelling and finished in a dark green colour. Both compounds will be surrounded by a 2.5 meter high steel palisade security fence coloured grey.
- 2.3.3 The new terminal tower will be up to 32.3 m high. The maximum height of other new equipment within the CSE compound is 5 m. The CSE compound and tower will be surrounded by a palisade fence 2.5 m high.
- 2.3.4 The substation and CSE compound will not be illuminated at night during normal operations. Floodlights will be installed at the substation but will only be used in the event of a fault during the hours of darkness or during the over-run of planned works.
- 2.3.5 One permanent access road from A90 to the substation will be constructed. One temporary access to the CSE compound will be constructed and the route will be identified by the Principal Contractor at detailed design stage.
- 2.3.6 An attenuation basin will be formed in an area south of the substation and the details will be confirmed at detailed design stage.

Figure 2.1 – Site Alternatives



DRAWING STATUS: FOR ACCEPTANCE

SSEN CONTRACT NUMBER	LT197	
SSEN MDR NUMBER	0011-OHL 132 11kV SA1 SA2-LAY-0802-1-002-01	
SSEN REVISION	DATE	HISTORY
01	28/05/20	FIRST ISSUE
02	13/07/20	UPDATED AS PER SSEN COMMENTS
03	04/09/20	UPDATED AS PER SSEN COMMENTS

ISSUE	<b>P04</b>	REMARKS:	
DRAWN	PH	UPDATED AS PER SSEN COMMENTS	
CHKD 1	DS		
CHKD 2	-		
APPD	JC	DATE	04/09/2020
ISSUE	<b>P03</b>	REMARKS:	
DRAWN	MW	UPDATED AS PER SSEN COMMENTS	
CHKD 1	DS		
CHKD 2	-		
APPD	JC	DATE	13/07/2020
ISSUE	<b>P02</b>	REMARKS:	
DRAWN	PH	UPDATED AS PER SSEN COMMENTS	
CHKD 1	DS		
CHKD 2	-		
APPD	JC	DATE	10/06/2020
ISSUE	<b>P01</b>	REMARKS:	
DRAWN		FIRST ISSUE	
CHKD 1			
CHKD 2			
APPD		DATE	

CIRCUIT: SA1 / SA2

**FIGURE 2.2**  
SECTION 37 SITE LOCATION PLAN

DRAWN	PH	DATE	27/05/2020	ACAD
CHKD 1	DS	DESIGN	-	
CHKD 2	-	APPD	JC	A2

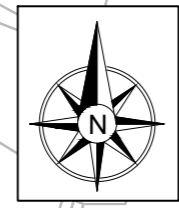
PROJECT:  
**ST FERGUS EAST 132kV/11kV S/S**  
JOB NUMBER: ULAH5321

SCALE: 1:2500 SHEET: 1 OF 1

BIM CODE:  
5C6I3M-PTDO-OHLLA-OHL\_X-DR-PM-200009

ISSUE: **P04** STATUS: **S3**

**PRELIMINARY DESIGN ONLY**  
**NOT FOR CONSTRUCTION**  
**FOR PLANNING**



ST. FERGUS GAS TERMINAL

ST FERGUS EAST  
132/11kV SUBSTATION

PERMANENT TARMAC ROAD & SUBSTATION  
PLANNING APPLICATION: APP/2019/2300

TEMPORARY ACCESS CREATED FOR CLASS 40  
PERMITTED DEVELOPMENT CABLING WORKS

TOWER CENTRE / CABLE SEALING  
END COMPOUND LIMIT OF  
DEVIATION OF UP TO 15m.  
MOVEMENT TO BE IN LINE WITH  
OHL IN DIRECTION OF TOWER 207.

TEMPORARY TRACKWAY PANELS  
LAYDOWN AREA

PROPOSED 132kV CABLE  
SEALING END COMPOUND

NEW TERMINAL TOWER 206R  
E: 408763 N: 853650

EXISTING TOWER 206 TO BE REMOVED

CRANE PAD

LAYDOWN AREA

FOUNDATION UPGRADE

5m LIMIT OF DEVIATION  
FROM POLE CENTRE

EXISTING OHL

P1  
408535,  
853560

P2  
408655.69,  
853545.69

P3  
408734.03,  
853579.32

10m LIMIT OF DEVIATION  
FROM POLE CENTRE

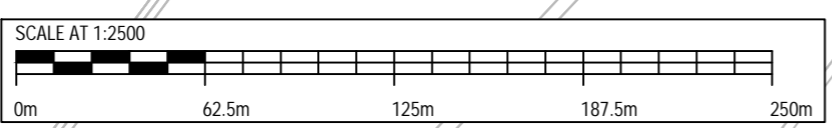
TEMPORARY WOODPOLE DIVERSION

10m LIMIT OF DEVIATION  
FROM POLE CENTRE

5m LIMIT OF DEVIATION  
FROM POLE CENTRE

FOUNDATION UPGRADE  
REFER TO SITE CLEARANCE  
FOR DETAILS ON TREE  
CLEARANCE.

- NOTES:-
- REFER TO ABERDEENSHIRE COUNCIL PLANNING APPLICATION APP/2019/2300 FOR DETAILS OF SUBSTATION.
  - REFER TO SSEN DRAWING NUMBER 0011-OHL 132 11kV SA1 SA2-LAY-0813-1-001-01 FOR DETAILS OF SITE CLEARANCE.
  - REFER TO SSEN DRAWING NUMBER 0011-SFEE-GA-1109-1-001-01 FOR DETAILS OF THE TERMINAL TOWER & CSE COMPOUND



DRAWING STATUS:  
FOR S37 APPLICATION

SSEN CONTRACT NUMBER	LT197	
SSEN MDR NUMBER	0011-SFEE-GA-1109-1-001-01	
SSEN REVISION	DATE	HISTORY
01	13/07/20	FIRST ISSUE
02	08/09/20	UPDATED TO NEW ODSE SETUP

ISSUE	<b>P02</b>	REMARKS:	
DRAWN	<b>PH</b>	UPDATED TO SHOW NEW ODSE SETUP	
CHKD 1	<b>GM</b>		
CHKD 2	<b>DS</b>		
APPD	<b>JC</b>	DATE	08.09.2020
ISSUE	<b>P01</b>	REMARKS:	
DRAWN		FIRST ISSUE	
CHKD 1			
CHKD 2			
APPD		DATE	

CIRCUIT: SA1 / SA2

**FIGURE 2.**  
E I FERGUS 2  
U I R E  
ER I ER E  
E I G E U G  
E E I

DRAWN	PH	DATE	09/07/2020	ACAD
CHKD 1	DS	DESIGN	-	
CHKD 2	-	APPD	JC	A2

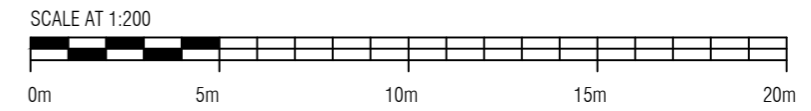
PROJECT:  
ST FERGUS EAST 132kV/11kV S/S  
JOB NUMBER:  
ULAH5321

**Balfour Beatty**

SCALE:	As Shown	SHEET:	1 OF 1
BIM CODE:	5C6I3M-PTD-ZZZZ-ZZ-CM-EDO-ZZZZ-049380		
ISSUE:	<b>P02</b>	STATUS:	<b>S3</b>

**SUBSTATION MINIMUM ELECTRICAL CLEARANCES**  
REQUIREMENTS TO BE IN ACCORDANCE WITH SSE SUBSTATION DESIGN SPECIFICATION DOC No. SP-PS-399

REF	CLEARANCE (mm)	132kV
E	PHASE TO EARTH	1200
Ph	PHASE TO PHASE	1400
S	DESIGN CLEARANCE FOR SAFETY	3500
SD	SAFETY DISTANCE	1400
Ds	WORKING & ACCESS CLEARANCE (VERTICAL)	3500
Dsh	WORKING & ACCESS CLEARANCE (HORIZONTAL)	2900
IH	INSULATION HEIGHT (PEDESTRIAN ACCESS)	2400

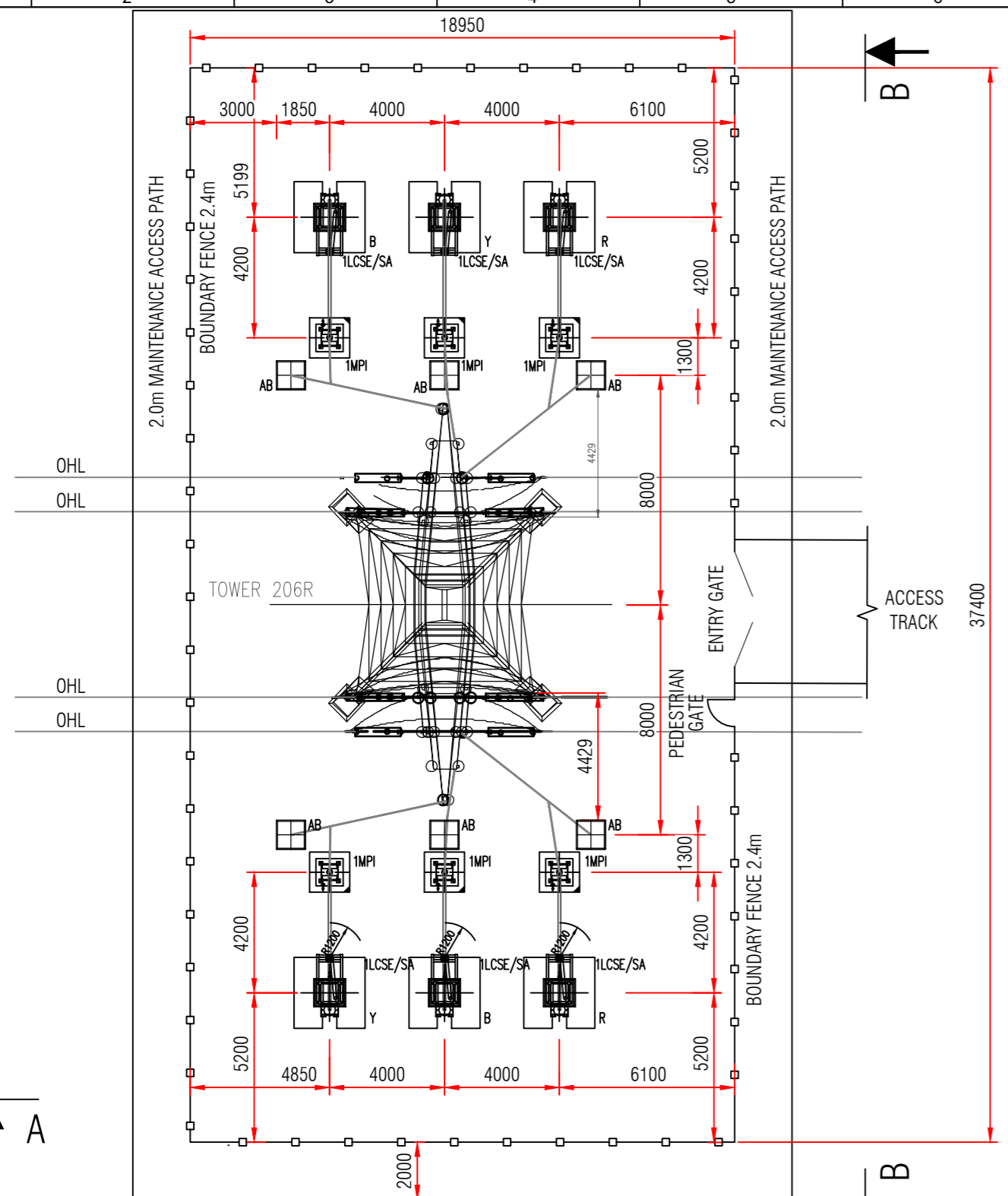


- NOTES:-**
- ALL DIMENSIONS GIVEN IN MILLIMETRES (mm) U.N.O.
  - 132kV TERMINAL TOWER IS SHOWN AS L4 (M) DT E3.
  - EQUIPMENT SHOWN WITHIN CSE COMPOUND INCLUDES ANCHOR BLOCKS, POST INSULATORS, SURGE ARRESTORS AND CABLE SEALING ENDS. EQUIPMENT IS INDICATIVE AT THIS STAGE AND MAY BE SUBJECT TO CHANGE AT DETAIL DESIGN STAGE.
  - ENTRY GATE POSITION MAY ALTER DEPENDING ON BEST DESIGN TO CORRELATE WITH PROPOSED TEMPORARY ACCESS TRACK.
  - CSE COMPOUND PLATFORM LEVEL SET AT 8.3M AOD.
  - FILL BELOW CSE COMPOUND TO ACHIEVE 8.3M AOD OMITTED UNTIL DETAIL DESIGN STAGE. ANTICIPATED FILL OF 1.5M REQUIRED.
  - THE TOWER TYPE SHOWN IS L4 (M) DT E3. THE SETTING LEVEL IS +600MM WITH OVERALL TOWER HEIGHT OF 29.9M. IF THE TOWER POSITION MOVES WITHIN THE L.O.D THEN THE TOWER TYPE MAY CHANGE TO L4 (M) DT E6 WITH OVERALL TOWER HEIGHT OF 32.3M.

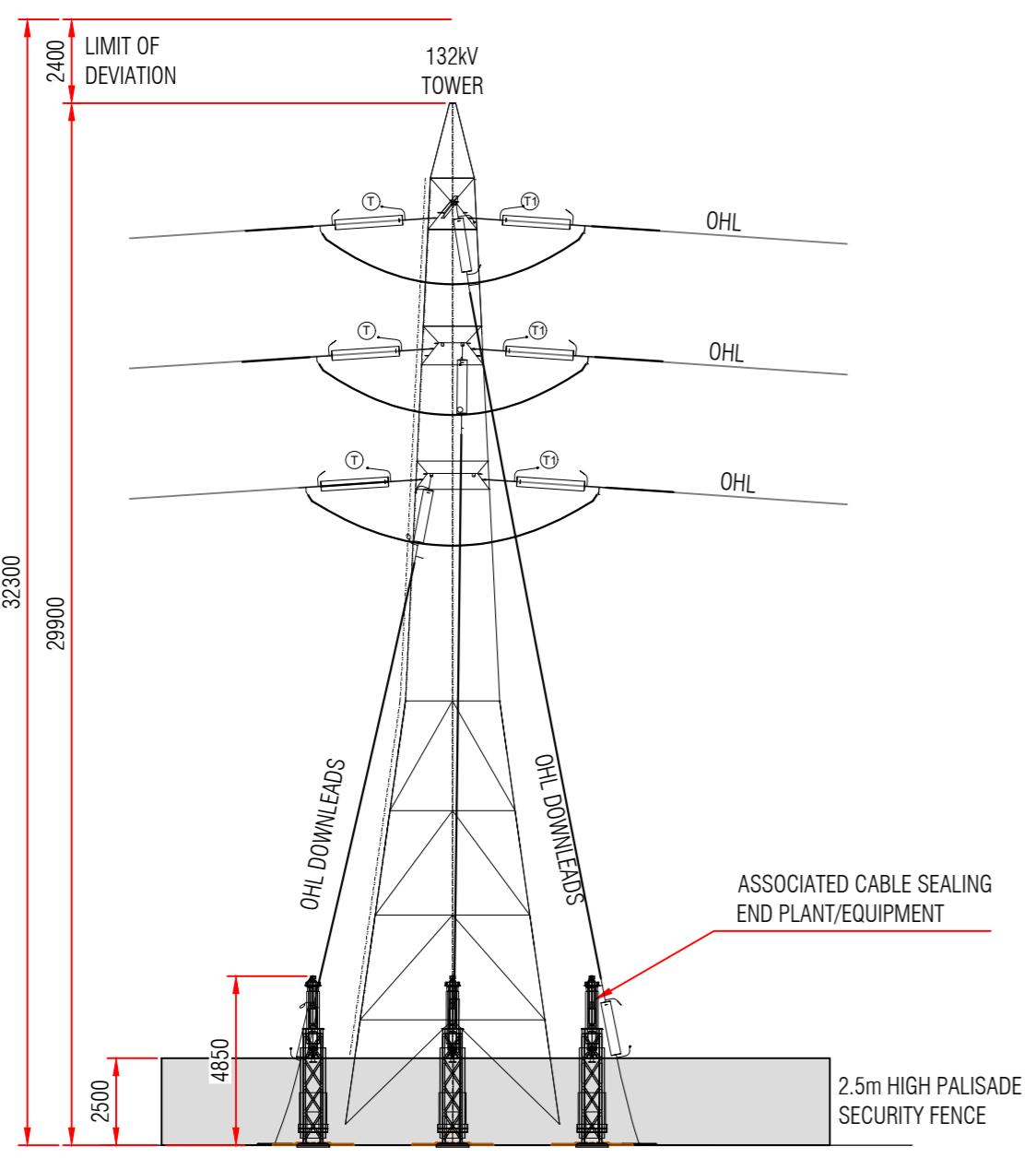
**PRELIMINARY DESIGN ONLY  
NOT FOR CONSTRUCTION**

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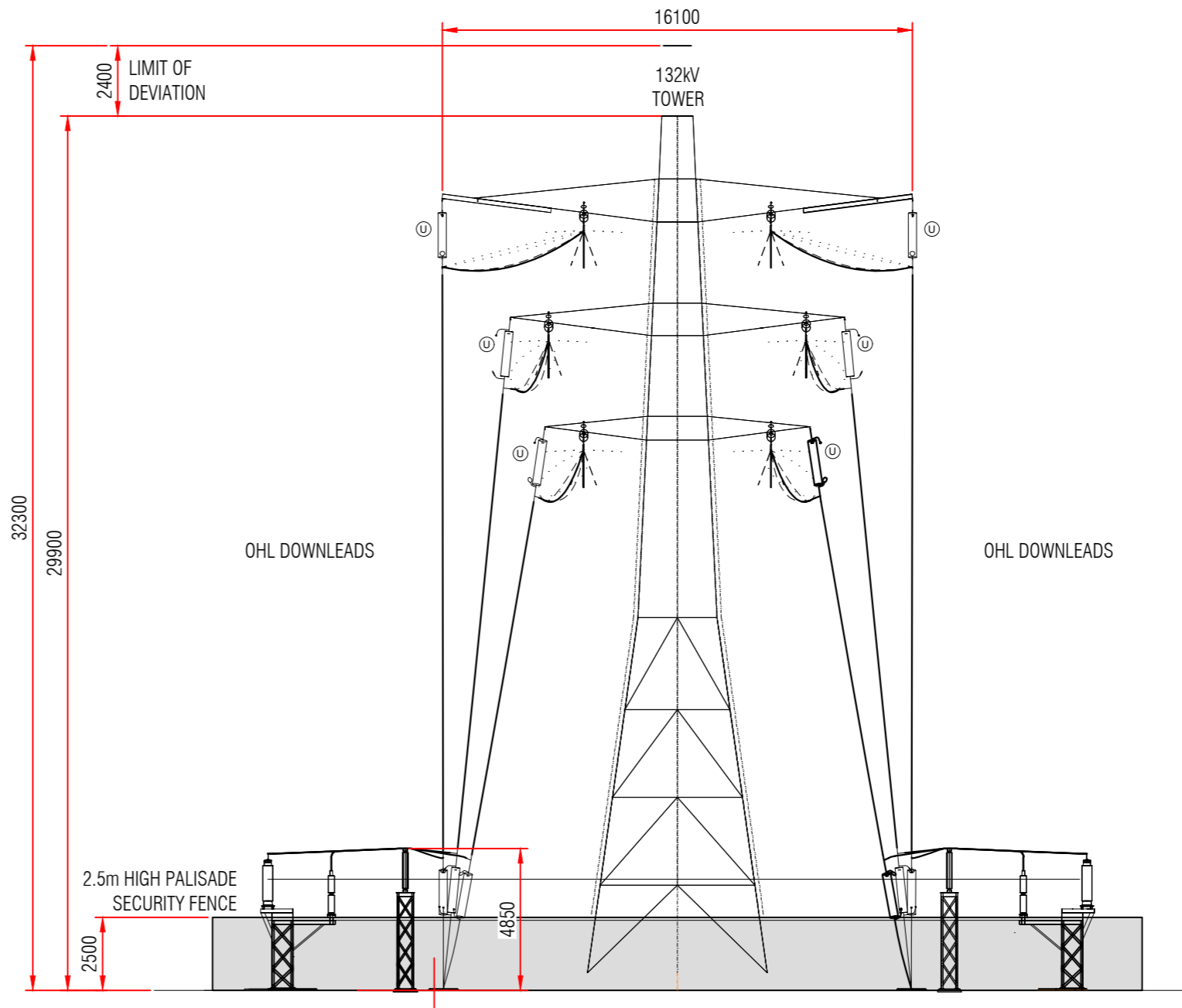
**FOR PLANNING**



PLAN LAYOUT ON 132kV CSE COMPOUND  
SCALE 1:200



ELEVATION A-A  
SCALE 1:200



ELEVATION B-B  
SCALE 1:200

## 2.4 Construction Activities

2.4.1 Key tasks during construction of the substation are as follows.

- Site clearance, including removal of existing vegetation; creation of temporary welfare and material laydown area;
- Creation of a level platform through processing of site won materials and import of commercial aggregates, as required;
- Connection into drainage network;
- Concrete foundations/bases for substation building and electrical equipment;
- Installation of new transformers;
- Restoration of ground temporarily disturbed during construction;
- Landscape earthworks and tree/shrub planting;
- Erection of security fence around the site perimeter; and
- Commissioning.

2.4.2 Key tasks during construction of the CSE compound and tower are as follows.

- Site clearance, including removal of existing vegetation; creation of temporary welfare and material laydown area;
- Diversion of existing OHL onto wood pole (conductors will be attached at 10 metres above ground and their lowest point will be 7 metres above ground);
- Creation of a level platform through processing of site won materials and import of commercial aggregates, as required;
- Concrete foundations/bases for tower and electrical equipment;
- Restoration of ground temporarily disturbed during construction;
- Erection of security fence around the site perimeter;
- Commissioning; and
- Removal of temporary OHL diversion.

2.4.3 Key tasks during construction of the double circuit cable (two cables) are as follows.

- Establishment of suitable laydown areas for material;
- Delivery of materials to site;
- Excavation of two trenches (approximately 0.5 m wide and to a depth of 1.5 m);
- Installation of uPVC cable ducting and surrounding stabilised backfill (cement bound sand or sand); and
- Remedial works to reinstate the immediate vicinity of the works and any ground disturbed, to pre-existing use.

2.4.4 The new substation site will have a footprint of approximately 0.65 ha. The CSE compound will have a footprint of approximately 0.10 ha.

## 2.5 Site Traffic

2.5.1 During the construction phase of the new substation, access to and from the site will be required by heavy good vehicles (HGVs) and light vehicles. The site will be accessed from a new junction with the A90.

2.5.2 Traffic movements to site will include steelwork, imported hardcore, fuel deliveries and personnel traffic. Aberdeenshire Council will be advised of final traffic numbers along with a traffic management plan by the appointed contractor.

2.5.3 Abnormal Indivisible Load (AIL) deliveries will be required to the Project site for the delivery of the 132/11kV transformers.

## 2.6 Site Establishment and Laydown Area

2.6.1 A temporary staff welfare and material laydown area will be established to the south of the proposed substation site. The area would be regraded and revegetated on completion of construction.

## **2.7 Program and Hours of Working**

- 2.7.1 It is anticipated that construction would take place over an 18 month period. Detailed programming of the works will be the responsibility of the appointed contractor in agreement with SHE Transmission.
- 2.7.2 Construction activities would in general be undertaken during daytime periods. This would involve work between approximately 07:00 to 19:00 in the summer and 07:30 to 17:30 (or as daylight allows) in the winter, for seven days a week. Any variation in these working hours would be agreed in advance with Aberdeenshire Council on an as-required basis. All deliveries would take place during agreed weekday hours only.

## **2.8 Operation of the Project**

- 2.8.1 The proposed substation would normally be unmanned, with regular operational switching being managed remotely through the SSE National Control Centre.
- 2.8.2 Substation plant will require maintenance and inspection at monthly intervals and some maintenance work would be undertaken most years. There would be other occasional visits as required for operational duties. This level of activity is consistent with the current substation.
- 2.8.3 A noise assessment has been undertaken, see Annex E. The effect on the new substation on noise levels at the nearest sensitive receptors will be negligible.

## 3. APPRAISAL OF ENVIRONMENTAL EFFECTS

### 3.1 Introduction

3.1.1 This section provides the environmental appraisal of the proposed St. Fergus Gas 132/11kV substation. Detailed results of surveys or technical studies are provided within relevant appendices to this report, as referenced. The environmental baseline is illustrated on Figure 3.1.

### 3.2 Landscape and Visual

#### Introduction

3.2.1 This section presents an appraisal of the landscape and visual impacts which are likely to occur as a result of the construction and operation of the St Fergus Gas 132/11 kV Substation (the substation).

3.2.2 The assessment is carried out following the guidance included in the 'Guidelines for Landscape and Visual Assessment', Third Edition, 2013 (GLVIA 3). The landscape and visual appraisals are separate but linked processes and consider the potential effects of the proposal on:

- The landscape as a resource in its own right (caused by changes to the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape);
- Views and visual amenity as experienced by people (caused by changes in the landscape).

#### Data Sources

3.2.3 The following sources have been used to obtain information on potential landscape and visual receptors:

- National programme of landscape character assessment - Banff and Buchan (Cobham Resource Consultants 1997);
- Aberdeenshire Local Development Plan 2017 Supplementary Guidance 9 - Special Landscape Area and 4 – The Coastal Zone; and
- OS mapping, aerial and street-level photography from online sources.

#### Field Survey

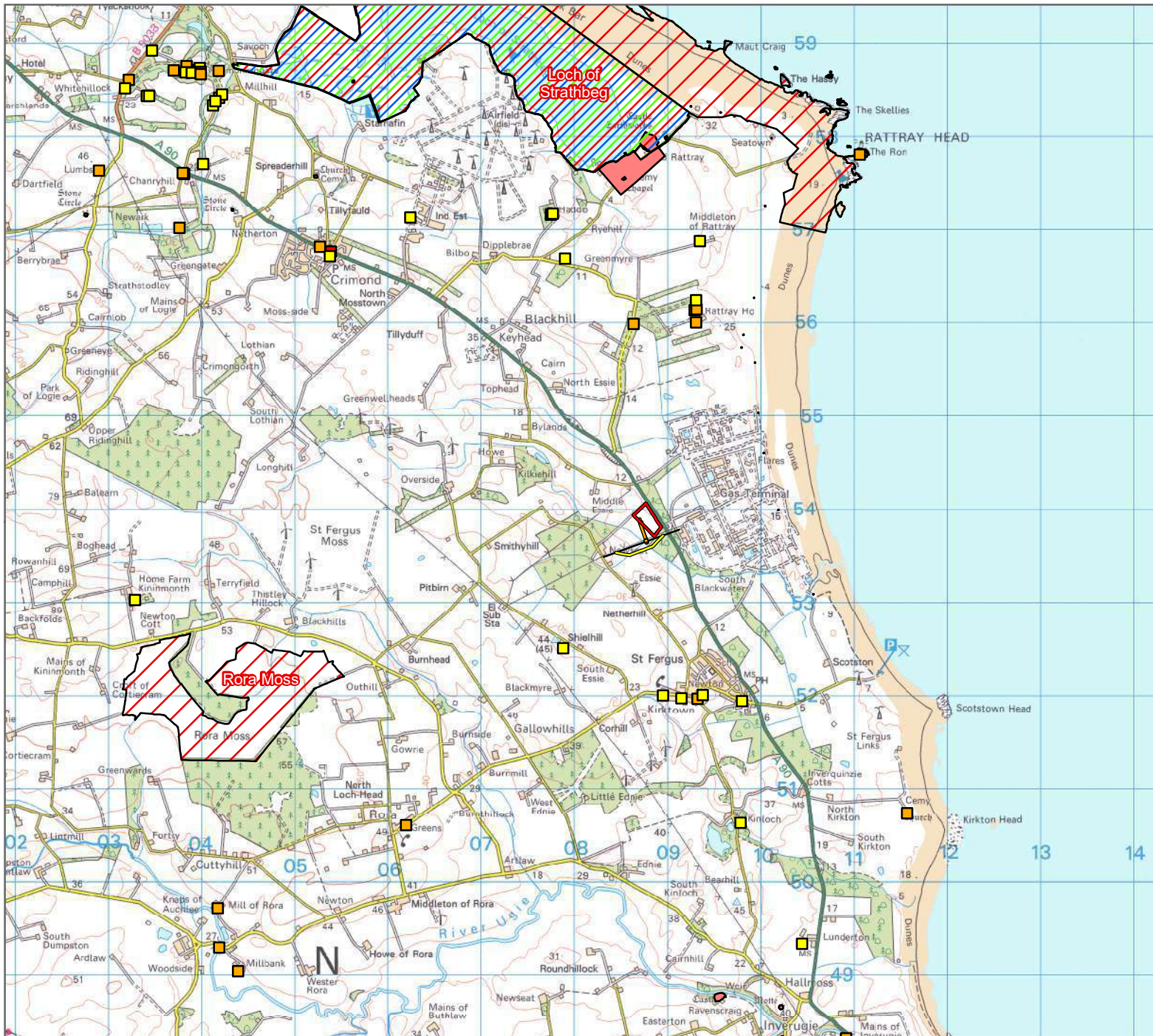
3.2.4 A visit to the study area to analyse the baseline and to take viewpoint photographs was undertaken by a chartered landscape architect on the 10<sup>th</sup> October 2018 with photography taken in December 2018 during clear weather.

#### Methodology

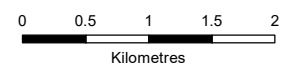
3.2.5 Although this appraisal does not form part of an Environmental Impact Assessment (EIA), it is considered appropriate to refer to the GLVIA 3 for guidance on methodology. The methodology is applicable to the assessment of short term effects during construction and to long term effects during operation.

#### Study Area

A 2 km radius study area was considered appropriate for the appraisal of landscape and visual effects. This was informed by previous experience of similar projects and fieldwork. The production of a ZTV was considered less helpful due to the flat nature of the surrounding topography and the fact that existing vegetation is not considered in its production. A ZTV was however prepared for the assessment (see Figure 3.2).



- Category A Listed Building
- Category B Listed Building
- Category C Listed Building
- Substation Application Site Boundary
- New Cable
- Temporary OHL
- Existing OHL
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- Ramsar Site
- Scheduled Monument



SCALE: See Scale Bar  
 SIZE: A4  
 PROJECT: 0478671  
 DATE: 02/10/2019

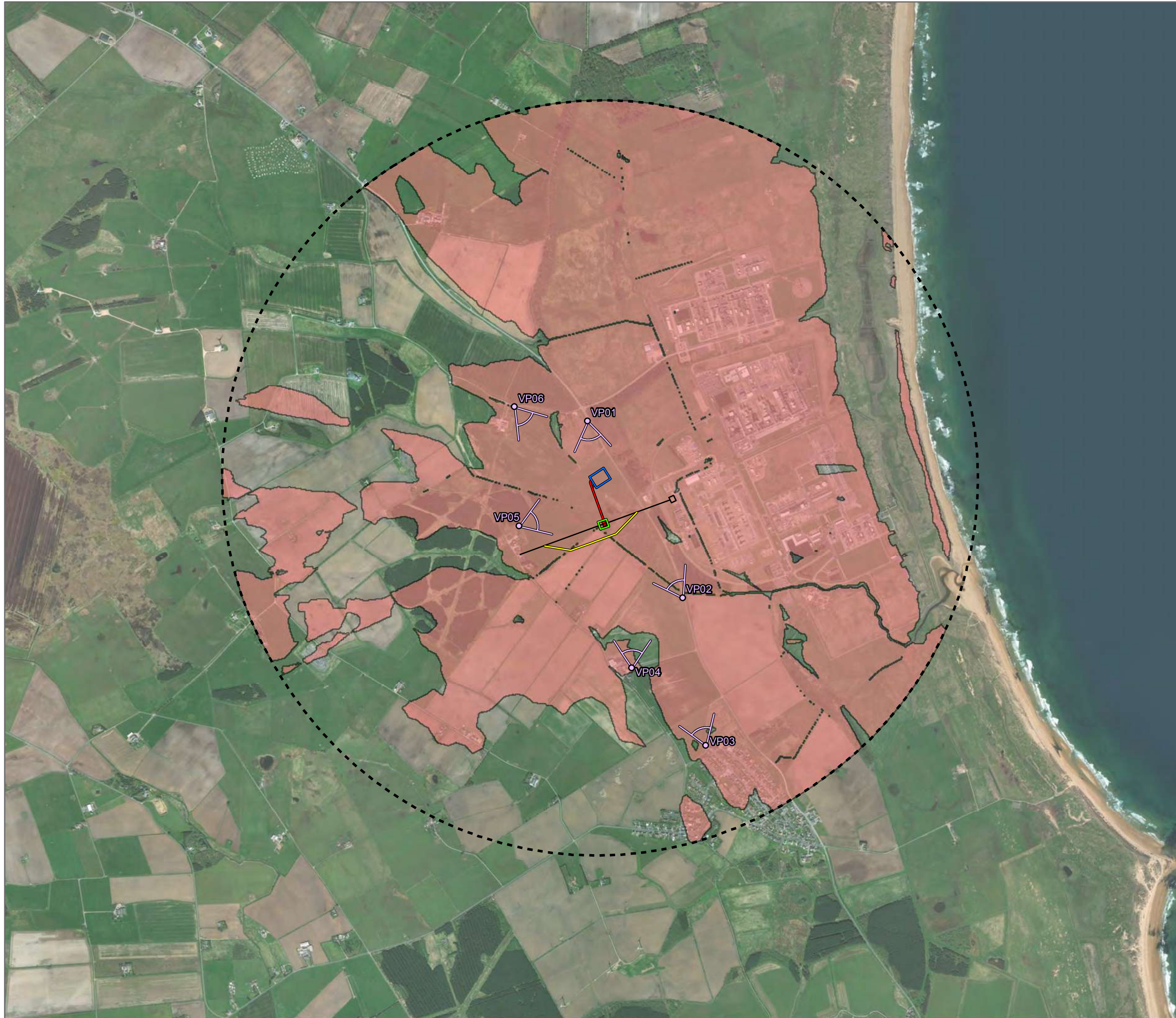
VERSION: A02  
 DRAWN: JS  
 CHECKED: PW  
 APPROVED: KG

**FIGURE 3.1  
 PROPOSED SITE AND  
 SURROUNDING ENVIRONMENT**

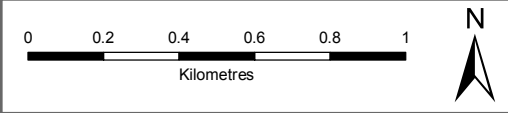


PROJECTION: British National Grid



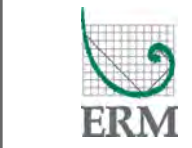


- Viewpoint Location
- Viewpoint Direction Indicator
- CSE Compound
- New Substation
- Old Substation
- New Cable
- Temporary OHL
- Existing OHL
- ⋯ 2km Buffer of New Substation
- one of Theoretical Visibility (Based on 10.6m Substation Height)



SCALE: See Scale Bar	VERSION: A03
SII: E: A3	DRAWN: WB
PROJECT: 0478671	CHECKED: JF
DATE: 13/09/2019	APPROVED: AB

**FIGURE 3.2**  
**ST.FERGUS GAS 132/11KV**  
**SUBSTATION VISIBILITY**  
**ASSESSMENT**



## Assessment Criteria

- 3.2.6 Judging landscape and visual effects requires consideration of the nature of the receptors (sensitivity) and the nature of the effects on those receptors (magnitude).
- 3.2.7 GLVIA 3 states that the sensitivity of receptors should be assessed in terms of the susceptibility of the receptor to the type of change proposed, and the value attached to the receptor. The magnitude of the effects on each receptor should be assessed in terms of its size and scale, geographical extent, duration and reversibility. Judgments on sensitivity and magnitude are combined to form a judgment regarding the overall significance of effect.

### Sensitivity

- 3.2.8 The sensitivity of landscape and visual receptors is described as high, medium or low depending on the following criteria:

#### Landscape

- The extent to which change can be accommodated without key characteristics being fundamentally altered (susceptibility); and
- The value attributed to those key characteristics as determined with reference to landscape designations and the application of criteria that indicates value (such as scenic quality, rarity and recreational value), as described in GLVIA 3 paragraph 5.44 to 5.47.

#### Visual

- The extent to which views contribute to the experience of the receptor e.g. residents, people engaged in outdoor recreation, visitors to heritage assets and communities will tend to have a higher susceptibility; and
- The level of value placed on those views e.g. as indicated through planning designations or appearance on maps and guidebooks.

#### Magnitude

- 3.2.9 The magnitude of change is described as high, medium, low or imperceptible, with reference to the extent to which changes in landscape characteristics and views are likely to be discernible. This involves assessing the size and scale of the change, the geographical extent over which it will be experienced, and the duration and reversibility of the change.

#### Level of Effect

- 3.2.10 The evaluations of sensitivity and magnitude are considered together to provide an overall level of effect. The level of effect is identified as negligible, minor, moderate or major. As there is no fixed linear relationship between sensitivity and magnitude, the application of professional judgment and experience is used to reach conclusions on overall level of effect.

## Baseline

### The Site

- 3.2.11 The location of the project is near to the existing St Fergus Gas Terminal, north of Peterhead and adjacent to the A90. The substation site is located northwest of the existing substation on the other side of the A90. A Cable Sealing End (CSE) compound is separated from the main substation site and sits further south and below the existing overhead line (OHL). Both locations are within farmland with a large area of scrub/shrub to the southeast. A small pond sits between the substation site and the CSE compound.
- 3.2.12 The site for the construction compound is within the same field as the substation to the south.
- 3.2.13 Due to its coastal location, topography is relatively flat with the ground rising gradually towards the west and south west. Views are very open towards the sea from higher ground and the infrastructure associated with the St Fergus Gas Terminal is visible in almost all views within the study area. There are small areas of woodland plantation, tree belts and hedgerows within the study area and where present are very effective at screening

views towards the lower components of the terminal. However, the majority of taller elements such as masts, pylons and stacks are widely visible.



Typical view of the substation site from an unclassified road to the south illustrating the visibility of the St Fergus Gas Terminal.

#### Landscape Character

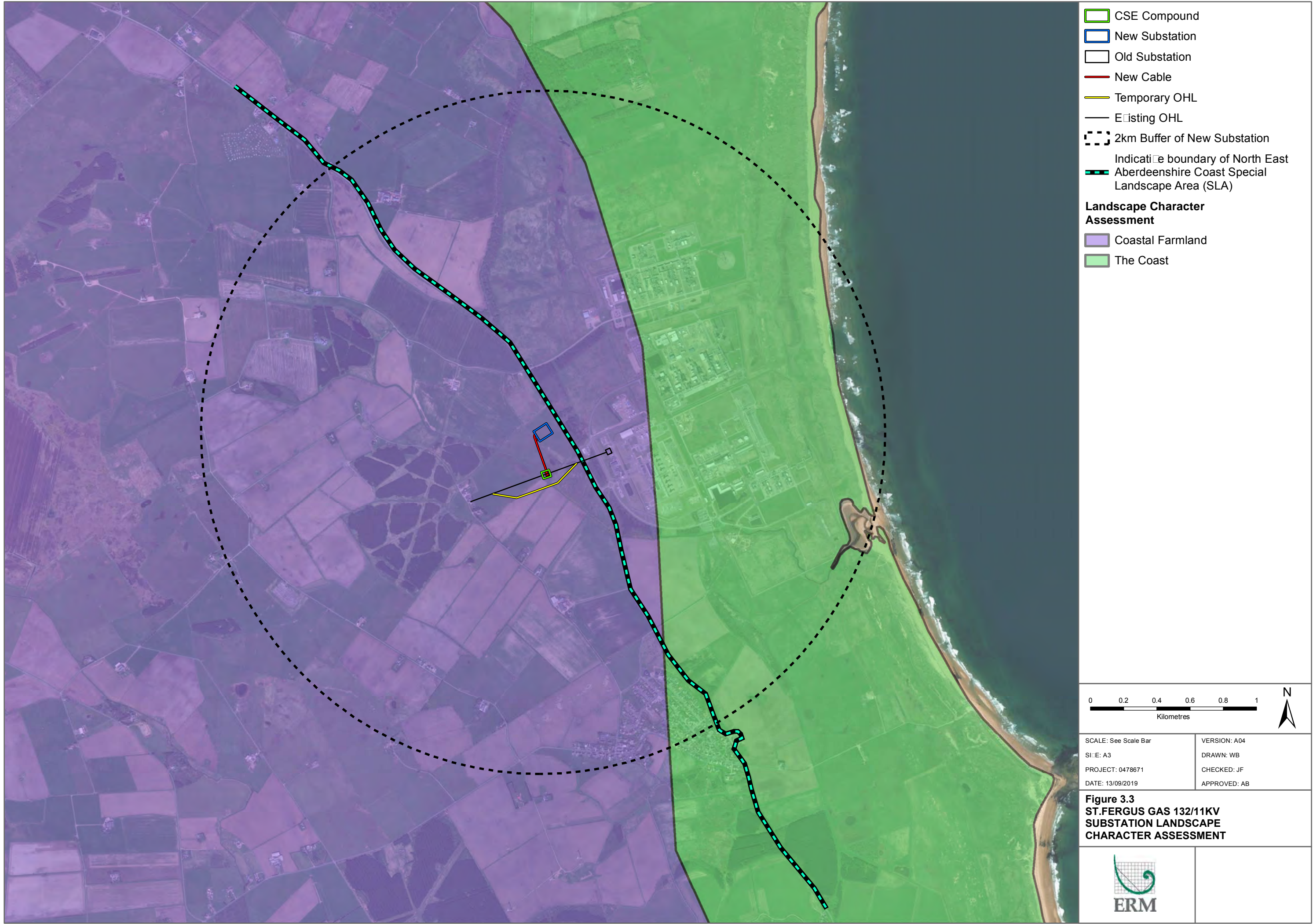
3.2.14 The site is located within the character area Eastern Coastal Agricultural Plain and adjacent to the Dunes and Beaches which form part of The Coastal Farmland and The Coast Landscape Character Type respectively as defined within the Banff and Buchan Landscape Character Assessment (CRC 1997) (see Figure 3.3). Key characteristics of these LCA that are relevant to the site include:

##### Eastern Coastal Agricultural Plain

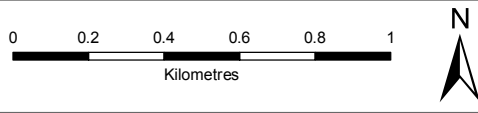
- broad sweep of very gently undulating land;
- generally open and windswept, almost constant views of the sea is a dominant feature of travel;
- broad leaved trees are restricted to occasional shelterbelts and groups around farmsteads; and
- farmsteads scattered across the landscape.

##### Dunes and Beaches

- almost uninterrupted views from the adjoining low coastal plains out to sea;
- limited vegetation, coastal grassland and marram dunes; and
- almost devoid of settlement but accommodates St Fergus Gas Terminal, the high chimneys of which dominate the dune landscape., a dramatic focal point in this smooth flat landscape.



- CSE Compound
  - New Substation
  - Old Substation
  - New Cable
  - Temporary OHL
  - Existing OHL
  - 2km Buffer of New Substation
  - Indicate boundary of North East Aberdeenshire Coast Special Landscape Area (SLA)
- Landscape Character Assessment**
- Coastal Farmland
  - The Coast



SCALE: See Scale Bar	VERSION: A04
SITE: A3	DRAWN: WB
PROJECT: 0478671	CHECKED: JF
DATE: 13/09/2019	APPROVED: AB

**Figure 3.3**  
**ST.FERGUS GAS 132/11KV**  
**SUBSTATION LANDSCAPE**  
**CHARACTER ASSESSMENT**



3.2.15 Guidelines for landscape conservation and enhancement relevant to this project include:

- the protection and revitalisation of distinctive landscape features in the District (hedgerows and stone dykes);
- to sensitively site any new large scale development so as to minimise impact on landscape character; and
- the promotion of good design practice in the siting and detail of new development within rural settlements and in the countryside.

#### Landscape Designations

3.2.16 The site does not sit within a nationally designated landscape. However, the site does sit adjacent to a locally designated landscape – North East Aberdeenshire Coast Special Landscape Area (see Figure 3.3). The Supplementary Guidance 9a of the local development plan 2017, includes the following relevant guidance:

- Settlements and industry have had a major impact on this landscape, most notably the St Fergus Gas Terminal;
- Overriding horizontal composition, emphasised by low lying landform and soft gradual transition from land to sea;
- Continued development of grid connection and associated infrastructure affect view to and from the SLA;
- Landscape and visual impacts of proposed developments in and around the edge of settlements, should be clearly set out... to ensure that any impacts (both positive and negative) can be determined.

#### Landscape Elements

3.2.17 There are no substantial areas of mature vegetation located within the footprints of the substation, the CSE compound nor the construction compound.

#### Visual

3.2.18 This section identifies the extent of potential visibility of the development from publicly accessible locations and identifies visual receptors that are assessed. This section also includes the viewpoints that are used to assess effects on visual receptors, including the reason for their selection. A Zone of Theoretical Visibility (ZTV) has been prepared based on a height of 10.6 m for the substation (see Figure 3.2). The ZTV illustrates the flat nature of the coastal plain with wide visibility within the study area but primarily to the north and south along the coastal plain. To the northwest, east and southwest the extent of the ZTV is curtailed by high ground within the coastal farmland. The ZTV takes no account of existing trees or woodland which, where present would provide additional screening.

#### Valued Views

3.2.19 There are no specific, recognised viewpoints within the surrounding landscape from which the substation site forms an important visual element.

#### Settlements and Residential Receptors

3.2.20 Views towards the substation and the CSE compound will be available from the northwest edges of St Fergus. There are several individual farmstead / residential properties situated to the south west and west of the development such as: Netherhill, Essie, and Newseat with Middle Essie, Bylands and North Essie located to the north. Most of the properties to the south west and west will have uninterrupted views towards the development, whereas the properties to the north will have limited views due to intervening topography and vegetation. Properties further west such as: South Essie, Sheilhill and Smithyhill will have limited views for similar reasons.

#### Footpaths

3.2.21 There are no public paths or long distance trails within the immediate vicinity of the substation site.

#### Roads

3.2.22 The A90 trunk road passes the substation site connecting Peterhead with Fraserburgh. The road serves mainly commuters and is particularly busy during rush hour in the vicinity of the gas terminal. Within the study area,

there are two unclassified roads which run parallel to the A90. The one closest to the development runs northwest from St Fergus to Smithyhill. A number of access roads or tracks run at right angles to the A90 providing access between the A90 and the minor roads which run parallel.

- 3.2.23 Views towards the substation from the A90 when travelling from the south will be restricted by a combination of roadside vegetation and woodland/ scrub cover. By contrast, views towards the substation will be available when travelling north, due to the lack of screening vegetation adjacent to the road. Distant views towards the St Fergus Terminus are partially screened from the A90 when travelling in both directions by adjacent dense vegetation. This screening is more effective where the road is in proximity to the terminus.
- 3.2.24 Many of the unclassified roads and tracks within the study area will have open views towards the substation particularly where on higher ground. Views are only restricted by existing vegetation and this is most effective when in proximity to the viewer. Available views towards the site generally include the gas terminal in the background.

### Representative Viewpoints

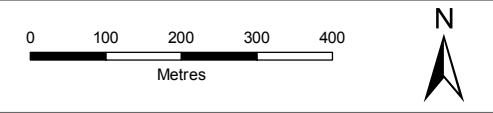
- 3.2.25 The following viewpoints have been selected as being representative of a range of receptor types, viewing distances, directions and types of view available in the study area. Viewpoint selection was based on desk review and field work. Details of each viewpoint are included in Table 3.1 below and their locations shown on Figure 3.4. These viewpoints are all from publicly accessible locations and have been agreed through consultation with Aberdeenshire Council.

**Table 3.1 Viewpoints**

No	Location	Grid Reference	Distance and Reason for selection
1	A90	E408686. N854211	267m – View for road users travelling south on the A90.
2	A90	E409204. N853249	563m – View for road users travelling north on the A90.
3	St Fergus	E409330. N852445	1.38km – View from the settlement edge of St Fergus. View is representative of residential receptors to the south of the project.
4	Netherhill	E408926. N852868	775mkm – Representative of views for residential receptors at Netherhill.
5	Newseat	E408274. N853514	427m – Representative of views for residential receptors at Newseat and road users using the unclassified road to the west of the project.
6	Middle Essie	E408289. N854288	554m – Representative of views for residential receptors at Middle Essie and road users using the unclassified road to the north of the project.



- Viewpoint Location
- Viewpoint Direction Indicator
- New Cable
- Temporary OHL
- Existing OHL
- CSE Compound
- New Substation
- Old Substation



SCALE: See Scale Bar	VERSION: A02
SHEET: A3	DRAWN: WB
PROJECT: 0478671	CHECKED: JF
DATE: 13/09/2019	APPROVED: AB

**FIGURE 3.4**  
**ST.FERGUS GAS 132/11KV**  
**SUBSTATION LANDSCAPE**  
**VIEWPOINTS**



PROJECTION: British National Grid

## Assessment of Effects

- 3.2.26 The assessment has been undertaken against the baseline described above. Unless stated otherwise, the effect on the landscape and visual amenity by either construction or operational of the proposed development is negative.

### Landscape Effects, Construction

- 3.2.27 The construction of the proposed development will last approximately 18 months and will include use of a temporary laydown and welfare area (construction compound) to the south of the substation, construction activity within the substation site, and the transport of materials using large vehicles and machinery. There will be no direct loss of trees as a consequence of the location of the site compound. However, the construction of the junction with the A90, requires the removal of the hedgerow aligning the frontage of the site to enable clear vehicular visibility. This hedgerow provides a low level of screening between the A90 and the site and has low ecological value. It is considered therefore that the loss of this hedgerow is of low magnitude and the landscape effect to be minor.
- 3.2.28 To enable the installation of the new tension tower at the CSE compound, a temporary wood pole/mast OHL will be required between two existing pylon towers (207 and 205). Although only required temporarily for 6 months, the location through an existing area of mixed woodland plantation will require the removal of a strip of trees below and to the side of the temporary line. The width of this clearing will be approximately 20 m. Some of the felled trees will be replaced once the temporary line is removed. To help maintain the future resilience of the overhead line between towers 206R and 207, the replacement planting carried out will maintain a 10 metre clearance from the outside conductor. It is considered that the loss of these trees is of low magnitude as the remaining trees will be unaffected, resulting in a negligible landscape effect.
- 3.2.29 The local landscape character within the site is considered of low to medium value as the project does not site within any local landscape designation. The landscape is considered of low susceptibility due the nature of the project and the presence of similar industrial infrastructure in the area. The landscape is therefore considered to be of low sensitivity. The magnitude of change to the local landscape due to construction is considered to be low, due to the small geographic extent and scale of construction and the short duration. The overall level of landscape effect due to construction is considered to be minor. Beyond ~1km, the magnitude of effect is likely to reduce to imperceptible, with a negligible overall level of effect.
- 3.2.30 The site is adjacent to a locally designated landscape – North East Aberdeenshire Coast Special Landscape Area. Within the study area this designation generally sits between the A90 and the coastline (see Figure 3.3). The St Fergus Gas Terminal and associated woodland are located between the project and the designation providing separation and screening. As such, it is considered that the magnitude of change due to construction will be low to imperceptible and result in a negligible overall landscape effect on the North East Aberdeenshire Coast Special Landscape Area.

### Landscape Effects, Operation

- 3.2.31 Once operational, the proposed development will consist of a new substation located to the west of the gas terminal, a separate smaller CSE compound and a new tension tower (pylon). Both compounds will be accessed via a new single junction from the A90, splitting into two access roads to serve each compound.
- 3.2.32 The substation compound will include two buildings 21 metres wide by 39 metres long with a ridge height of 10.6 metres and a separate control building 18 metres by 14 metres long with a ridge height of 5.5 metres. The buildings will be clad with steel panelling and finished in a dull green colour. Both compounds will be surrounded by a 2.5 metre high steel palisade security fence coloured grey. The substation and CSE compound will not be illuminated at night during normal operations. Additional strands of electrical fencing on top of the security fence may be installed. A 12 metre wide woodland belt with a shrub edge will surround the substation compound on three sides. The western boundary will consist of a combination of shrub edge species with groups of smaller trees to accommodate the proposed underground electrical cables into the transformer buildings. No planting will take place in a 1.5m wide corridor either side of the centre of the cable.
- 3.2.33 The proposed tree belt along the east of the substation will continue south, parallel to the A90, to provide further landscape integration and to offset the loss of hedgerow.
- 3.2.34 The smaller CSE compound will include a new tension tower (up to 32.3m high) and various electrical components sitting within a fenced enclosure. The new tension tower will be no higher than the existing pylons and situated on the same alignment. It is not feasible to provide tree screening to the CSE compound due to the




proximity of the existing overhead cables and the new underground cable. Planting would be ineffective in screening the new tower.


- 3.2.35 The local landscape within the site is considered of low to medium value as the project is not within a local landscape designation. The landscape is considered of low susceptibility due the nature of the project and the presence of similar infrastructure in the area. The landscape is therefore considered to be of low sensitivity. The magnitude of change for the local landscape is considered to be low, due to the nature of the project; many of the project components are already part of the landscape character such as the OHL and industrial buildings, and due to the small geographic extent. As such, it is considered that the operational effect on the local landscape is minor.
- 3.2.36 The St Fergus Gas Terminal and associated woodland are located between the project and the North East Aberdeenshire Coast Special Landscape Area providing separation and screening. As such, it is considered that the magnitude of change due to operation will be low to imperceptible and result in a negligible overall landscape effect on this local designation.


Visual Effects


An assessment of visual effects is provided in Table 3.2.

**Table 3.2 Assessment of Visual Effect**

No	Location	
1	A90	<p><i>Existing View</i>            This viewpoint represents glimpsed views obtained by road users travelling south on the A90. There is dense vegetation aligning the boundary of the St Fergus Gas Terminal to the north restricting its visibility, whilst the vegetation aligning the site boundary is relatively sparse. The view looks across a mixture of arable and pasture fields which gently rise towards the west. Pylons, overhead wires and wind farms are prominent components on the horizon being clearly visible against the sky.</p>  <p>The existing view from the A90 travelling south.</p> <p><i>Sensitivity of visual receptors</i>            Visual receptors include road users traveling south towards Aberdeen and traveling to work at the St Fergus Gas Terminal. Road users are considered to be of low sensitivity especially when commuting.</p> <p><i>Magnitude of change</i>            During the construction period, the construction and use of the temporary laydown and welfare area to the south of the substation site, and the transport of materials using vehicles and construction machinery will be partially visible from this viewpoint, but more</p>

		<p>visible further north due to the removal of the existing hedgerow. The magnitude of change to road users during construction is considered to be <b>medium to low</b>.</p> <p>Once operational, the proposed development will be a new feature in the view visible against the skyline (see year 1 photomontage for VP1). The magnitude of change to road users during operation is considered to be <b>medium</b> at year 1. At year 12 (see year 12 photomontage for VP1) it is considered that the magnitude of change will have reduced to <b>low</b> due to the screening and integration benefits of the planting mitigation.</p> <p><i>Level of Effect</i> The level of visual effect during the construction period is considered to be <b>minor</b>.</p> <p>The level of visual effect during the operational phase is considered to be <b>moderate to minor</b> at year 1 and reducing to <b>minor</b> at year 12.</p>
<p><b>2</b></p>	<p>A90</p>	<p><i>Existing View</i> This viewpoint represents glimpsed views obtained by road users travelling south on the A90. It is a relatively open view across arable fields with a young tree plantation forming part of the horizon. Pylons are a notable component of the view. The properties at Newseat are visible on the horizon. Further south along the road, views to the west across the site are more restricted by the plantation.</p>  <p>The existing view from the A90 travelling north.</p> <p><i>Sensitivity of visual receptors</i> Visual receptors include road users traveling north towards Fraserburgh and traveling to work at the St Fergus Gas Terminal. Road users are considered to be of <b>low</b> sensitivity especially when commuting.</p> <p><i>Magnitude of change</i> During the construction period, there will be little visibility of construction activities or construction components as these will be screened by the existing plantation. It is feasible that the erection of the new tension tower may be visible, but this would be a transient view. The magnitude of change to road users during construction is considered to be <b>imperceptible</b>.</p> <p>Once operational, the proposed development is unlikely to be visible behind the existing plantation from this viewpoint. A new tower will be visible from this viewpoint however, this will be seen in conjunction with other existing towers. The magnitude of change to the view for road users during the operational period is considered to be <b>imperceptible</b>.</p>

		<p><i>Level of Effect</i></p> <p>The level of visual effect during the construction period is considered to be <b>negligible</b>.</p> <p>The level of visual effect during the operational phase is considered to be <b>negligible</b>.</p>
<p><b>3</b></p>	<p>St Fergus</p>	<p><i>Existing View</i></p> <p>This viewpoint represents residential receptors located at the northern fringes of the settlement at St Fergus. It also represents road users traveling between St Fergus and the A90. The view is looking north towards the plantation, which forms the horizon, and includes hedgerows in the foreground and pasture in the middle ground. In the wider view, the St Fergus Gas Terminal further is a very prominent feature especially where unscreened by woodland. The tops of pylons are just discernible.</p>  <p>The existing view from St Fergus.</p>

		 <p>St Fergus Gas Terminal in context with viewpoint 3.</p> <p><i>Sensitivity of visual receptors</i>        Visual receptors include residential receptors of <b>high</b> sensitivity and road users of <b>low</b> sensitivity.</p> <p><i>Magnitude of change</i>        During the construction period, there will be little visibility of construction activities or construction components as these will be screened by the existing plantation. It is feasible that the erection of the new tension tower may be visible. The magnitude of change to road users during construction is considered to be <b>imperceptible</b>.</p> <p>Once operational, the proposed development is unlikely to be visible behind the existing plantation from this viewpoint. A new tower might be visible from this viewpoint however, however this will be seen in conjunction with other existing towers. The magnitude of change to the view for road users during the operational period is considered to be <b>imperceptible</b>.</p> <p><i>Level of Effect</i>        The level of visual effect during the construction period is considered to be <b>negligible</b>.</p> <p>The level of visual effect during the operational phase is considered to be <b>negligible</b>.</p>
4	Netherhill	<p><i>Existing View</i>        This viewpoint represents residential receptors at Netherhill looking north towards the project. This is an expansive view across farmland with the topography rising slightly before dropping towards the coastline. A considerable extent of woodland forms the horizon with uninterrupted views of the sky except for a number of wooden electricity poles. In the wider view, the St Fergus Gas Terminal is a very prominent feature especially where unscreened by woodland. Due west, views of the sea are available.</p>



The existing view from Netherhill.



St Fergus Gas Terminal in context with viewpoint 4.

*Sensitivity of visual receptors*


Visual receptors include residential receptors of **high** sensitivity.

*Magnitude of change*

Reference to the photomontage for VP 4 (see year 1 photomontage for VP4) indicates that the project cannot be seen from this viewpoint due to intervening topography. Therefore, the level of visual effect during the construction period is considered to be **negligible**.

*Level of Effect*

Reference to the photomontage for VP 4 (see year 1 photomontage for VP4) indicates that the project cannot be seen from this viewpoint due to intervening topography. Therefore, the level of visual effect during the operational phase is considered to be **negligible**.

<p><b>5</b></p>	<p>Newseat</p>	<p><i>Existing View</i></p> <p>This viewpoint represents views from a number of properties at Newseat. The location is from a track to the north of the properties. This is an expansive view across farmland which is falling towards the coast. Components in the view include woodland plantations, the St Fergus Gas Terminal, pylons and pasture in the foreground including a small pond.</p>  <p>The existing view from Newseat.</p> <p>Sensitivity of visual receptors        Visual receptors include residential receptors of <b>high</b> sensitivity.</p> <p><i>Magnitude of change</i></p> <p>During the construction period, the construction and use of the temporary laydown and welfare area to the south of the substation site, and the transport of materials using vehicles and construction machinery will be clearly visible from this viewpoint. The construction of the CSE compound and new tension tower will also be visible. Construction activity and machinery will be seen in the context of the gas terminus. The magnitude of change to residential receptors during construction is considered to be <b>medium</b>.</p> <p>Once operational, the proposed development will be seen as two new features in the view. The largest visual effect will arise from the visibility of the two transformer buildings within the substation. These buildings will be viewed against a background of woodland which will assist in integrating the structures into the landscape. Similarly, they will be viewed in the context of the gas terminal.</p> <p>The CSE compound is a lower structure (except for the new tower terminal) and is seen against a backdrop of vegetation. The new tension tower will be seen in the context of the existing pylons (see year 1 photomontage for VP5). The magnitude of change to residential receptors during operation is considered to be medium at year 1. At year 12, (see year 12 photomontage for VP5) it is considered that the magnitude of effect will have reduced to low due to the screening and integration benefits of the planting mitigation.</p> <p><i>Level of Effect</i></p> <p>The level of visual effect during the construction period is considered to be <b>moderate to minor</b>.</p> <p>The level of visual effect during the operational phase is considered to be <b>moderate</b> at year 1 and reducing to <b>minor</b> at year 12.</p>
<p><b>6</b></p>	<p>Middle Essie</p>	<p><i>Existing View</i></p>

This viewpoint represents residential receptors at Middle Essie and road users using the unnamed road which links several properties to the west with the A90. The residential receptors at Middle Essie are slightly more elevated than the location of the viewpoint. Views are fairly expansive, particularly to the southeast. To the east, woodland plantation forms the horizon with only the taller components of the gas terminus visible above the trees. Pylons and overhead wires are notable components of the view. Some light coloured buildings within the gas terminal and adjacent to the A90 are discernible features in the view.



The existing view from Middle Essie.

*Sensitivity of visual receptors*

Visual receptors include residential receptors of **high** sensitivity and road users of **low** sensitivity.

*Magnitude of change*

During the construction period, the construction and use of the temporary laydown and welfare area to the south of the substation site, and the transport of materials using vehicles and construction machinery will be visible from this viewpoint. However, some of the activity may be screened by the trees surrounding the nearby existing substation although this is less likely for the residential receptors at Middle Essie. The construction of the CSE compound and new tension tower will be more visible. Construction activity and machinery will be seen in the context of the gas terminus and viewed against a wooded background. The magnitude of change to residential receptors during construction is considered to be **low to medium**.

Once operational, the proposed development will be seen as two new features in the view. The largest visual effect will arise from the visibility of the two transformer buildings within the substation. These buildings will be viewed against a background of woodland which will assist in integrating the structures into the landscape. Similarly, they will be viewed in the context of the gas terminal. In addition, it is likely that the largest structures will be screened although this is less likely for the residential receptors at Middle Essie. The CSE compound is a lower structure (except for the new terminal tower) and will be seen against a backdrop of vegetation whilst the new tension tower will be seen in the context of the existing pylons.

*Level of Effect*

The level of visual effect during the construction period is considered to be **moderate to minor**.

The level of visual effect during the operational phase is considered to be **moderate to minor** at year 1 and reducing to **minor** at year 12.

### **Mitigation**

3.2.37 In order to mitigate the visual impact of the proposed substation during operation, it is proposed that a 12 m wide tree belt be planted around the perimeter of the substation site. This tree belt should also continue parallel to the A90 along the frontage of the site to offset hedgerow loss. Planting along the western boundary requires to consider the location of a proposed underground electricity cable and therefore the species mix is restricted to shrub and smaller tree species such as birch and alder. The planting will provide high level screening and filtering of views and will assist in integrating the development into the landscape. It will also offset the loss of trees from construction including the installation of the temporary overhead line. The planting mitigation plan is provided as Figure 3.5.

### **Summary**

- 3.2.38 The assessment has examined the potential effects which the proposed substation extension will have on the landscape and views across a 2 km radius study area. The assessment found that the construction of the proposed development is likely to result in a minor effect on the character of the local landscape that immediately surrounds the proposed site. Beyond ~1km, the nature of the effect is likely to be imperceptible, and to give rise to a negligible overall level of effect.
- 3.2.39 The level of landscape effect of the proposed development once operational is considered to be minor. The level of landscape effect on the North East Aberdeenshire Coast Special Landscape Area is considered to be negligible.
- 3.2.40 The assessment of visual effects considers that during the construction period there will be a moderate to minor effect on views from Newseat and Middle Essie, minor and negligible effects from the A90, and negligible effects on views from St Fergus and Netherhill. Once the proposed development is operational, the level of residual effect on these views is considered to be minor or remain negligible.



### 3.3 Ecology, Ornithology and Nature Conservation

#### Introduction

- 3.3.1 This Section provides an appraisal of potential impacts on terrestrial ecology and ornithology. The proposed St Fergus Gas substation, cable sealing end compound and temporary overhead diversion is referred to as the site <sup>(2)</sup>.

#### Baseline data collection

- 3.3.2 A data request for information on designated sites, species records for the last ten years and information on the presence of habitats was made to the North East Scotland Biological Records Centre (NESBRC). The search was carried out over a 2 km radius from the approximate centre of the proposed site.
- 3.3.3 In November 2018 an Extended Phase 1 habitat survey was undertaken on behalf of Scottish Hydro Electric Transmission. The site, as shown in Figure 3.6 was surveyed plus a 100 m buffer, as per the methodology and habitat descriptions followed in the Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 Habitat Survey (2010) <sup>(3)</sup> as extended for use in Environmental Assessment <sup>(4)</sup>. English names for plant species follow Stace (2010) <sup>(5)</sup>. Survey for potential groundwater-dependant terrestrial ecosystems was also undertaken within 250 m of the site. This is reported in Annex B.1 and summarised below.

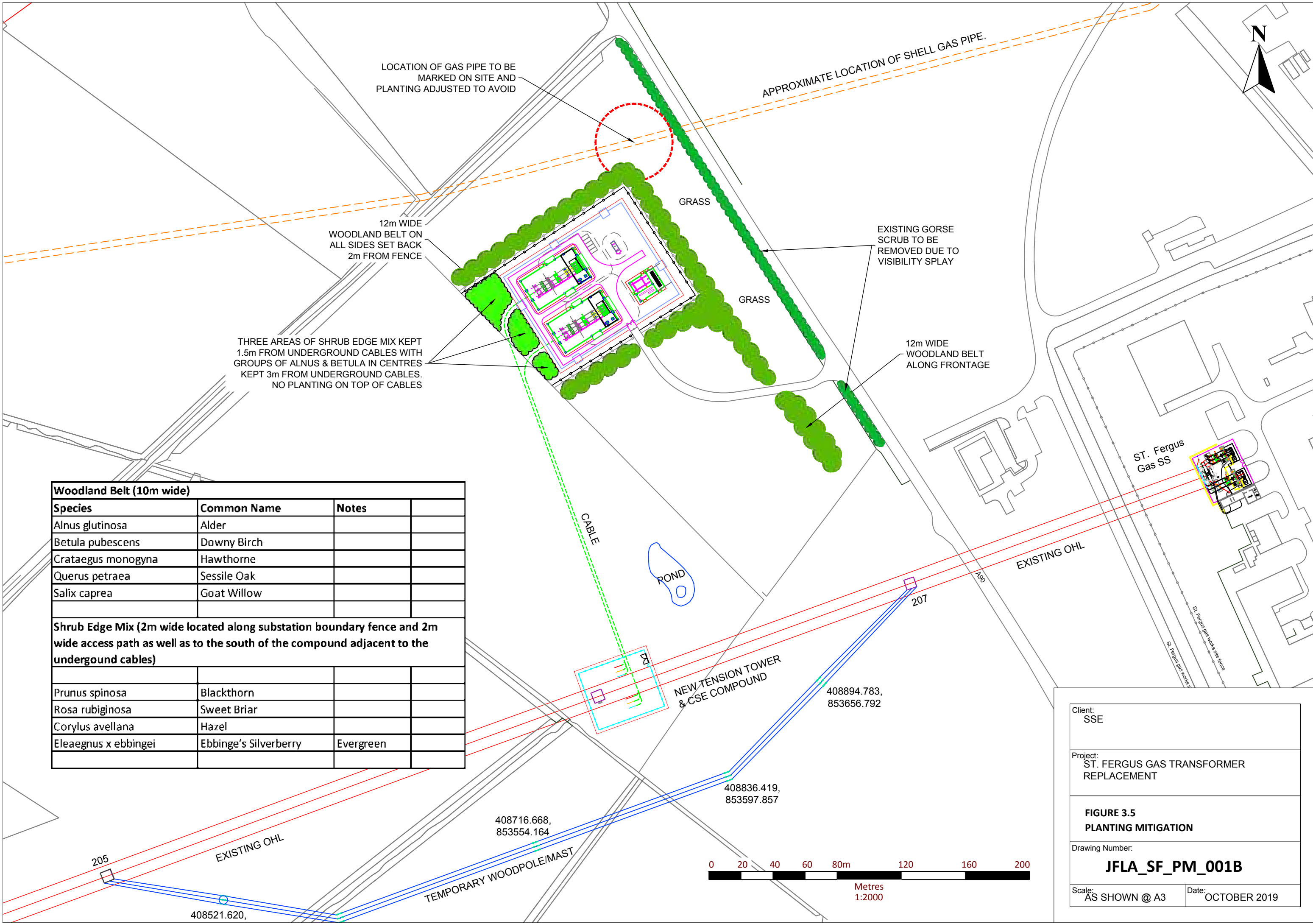
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(2) NK 08655 53612

(3) Joint Nature Conservation Committee (2010) Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit, Joint Nature Conservation Committee (JNCC), Peterborough.

(4) Guidelines for Baseline Ecological Assessment. Institute of Environmental Management. 1995. E & FN SPON.

(5) New Flora of the British Isles. 3rd edition 2010. Cambridge University Press.



LOCATION OF GAS PIPE TO BE MARKED ON SITE AND PLANTING ADJUSTED TO AVOID

APPROXIMATE LOCATION OF SHELL GAS PIPE.

12m WIDE WOODLAND BELT ON ALL SIDES SET BACK 2m FROM FENCE

EXISTING GORSE SCRUB TO BE REMOVED DUE TO VISIBILITY SPLAY

THREE AREAS OF SHRUB EDGE MIX KEPT 1.5m FROM UNDERGROUND CABLES WITH GROUPS OF ALNUS & BETULA IN CENTRES KEPT 3m FROM UNDERGROUND CABLES. NO PLANTING ON TOP OF CABLES

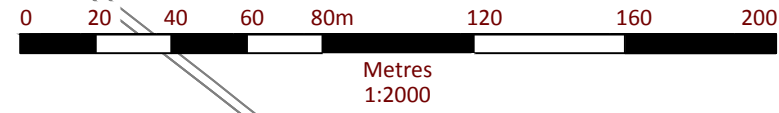
12m WIDE WOODLAND BELT ALONG FRONTAGE

Woodland Belt (10m wide)			
Species	Common Name	Notes	
<i>Alnus glutinosa</i>	Alder		
<i>Betula pubescens</i>	Downy Birch		
<i>Crataegus monogyna</i>	Hawthorne		
<i>Quercus petraea</i>	Sessile Oak		
<i>Salix caprea</i>	Goat Willow		
Shrub Edge Mix (2m wide located along substation boundary fence and 2m wide access path as well as to the south of the compound adjacent to the underground cables)			
<i>Prunus spinosa</i>	Blackthorn		
<i>Rosa rubiginosa</i>	Sweet Briar		
<i>Corylus avellana</i>	Hazel		
<i>Eleaagnus x ebbingei</i>	Ebbinge's Silverberry	Evergreen	

ST. Fergus Gas SS

EXISTING OHL

NEW TENSION TOWER & CSE COMPOUND



Client: SSE

Project: ST. FERGUS GAS TRANSFORMER REPLACEMENT

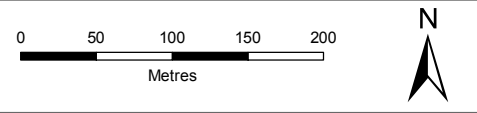
**FIGURE 3.5 PLANTING MITIGATION**

Drawing Number: **JFLA\_SF\_PM\_001B**

Scale: AS SHOWN @ A3 Date: OCTOBER 2019



- Target Note
- 100m Buffer of Illustrative Footprint
- 250m Buffer of Illustrative Footprint
- New Cable
- Temporary OHL
- Existing OHL
- Proposed Access Road
- CSE Compound
- New Substation
- Old Substation
- Phase 1 Habitat Type:**
- A2.2 - Scrub - scattered
- G2.1 - Running water - eutrophic
- J2.2.2 - Defunct hedge - species-poor
- J2.6 - Dry ditch
- No Access Available
- A1.1.2 - Broadleaved woodland - plantation
- A1.2.2 - Coniferous woodland - plantation
- A1.3.2 - Mixed woodland - plantation
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B2.2 - Neutral grassland - semi-improved
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- B6 - Poor semi-improved grassland
- G1.1 - Standing water - eutrophic
- J1.1 - Cultivated/disturbed land - arable
- J3.6 - Buildings
- J4 - Bare ground
- J5 - Other habitat



SCALE: See Scale Bar	VERSION: A06
SITE: A3	DRAWN: WB
PROJECT: 0478671	CHECKED: SM
DATE: 13/09/2019	APPROVED: AB

**FIGURE 3.6**  
**ST.FERGUS GAS 132/11KV**  
**SUBSTATION PHASE 1 EXTENDED**  
**SURVEY MAP**



- 3.3.4 In early 2019 the proposed location of the site was moved approximately 150 m to the north. In order to provide baseline survey data for the new location plus the 100 m and 250 m buffers, an Extended Phase 1 habitat survey of the additional areas not previously surveyed was undertaken in June 2019.
- 3.3.5 Winter Vantage Point (VP) surveys following guidance issued by SNH <sup>(6)</sup> were carried out in 2018/19. The aim was to determine potential collision risk of wintering geese and waterfowl crossing the temporary OHL diversion. The survey focused on qualifying assemblage species from the Loch of Strathbeg Special Protection Area (SPA) and Ramsar site (Annex B.3). Thirty six hours of watches were undertaken between October 2018 and February 2019.
- 3.3.6 Three breeding bird survey visits were undertaken between April and June 2019. Recording methodology was based on a scaled down Common Birds Census (CBC) (refer to SNH, 2017; Gilbert et al., 1998 <sup>(7)</sup> <sup>(8)</sup>), including the use of standard British Trust for Ornithology (BTO) species and behaviour codes. All birds seen or heard were recorded. The survey area comprised the site plus a buffer of 250 m surrounding this (Annex B.2).

## Baseline

### Habitat

- 3.3.7 Habitats in the survey area consist of improved grassland, poor semi-improved grassland, arable land and marshy grassland, crossed by a small watercourse (the Black Water), and flowing ditches (Figure 3.6). The Black Water is a modified watercourse, approximately 1 m wide and between 20 – 75 cm deep. Areas of standing water were present which were associated with areas of marshy grassland and a mixed plantation woodland overlapped the eastern extent of the site. Land within the existing St Fergus terminal comprised hardstanding and industrial buildings. This area falls within the survey extent, but is outwith the site, and was not accessed during the survey (Figure 3.6; Annex B.1).
- 3.3.8 Habitats overall were of low botanical value. The pond, Black Water and ditches showed the most botanical interest with abundant submerged and marginal macrophytes in the pond and to a lesser extent, within the ditches and Black Water. *Potamogeton natans* (broad-leaved pondweed) was dominant throughout and *Lemna minor* (common duckweed) was frequent in the margins. *Glyceria fluitans* (floating sweet-grass), *Nasturtium officinale* (watercress) and *Veronica beccabunga* (brooklime) occurred occasionally. Emergent vegetation included *Sparganium erectum* (branched bur-reed) and *Equisetum fluviatile* (water horsetail).

### Birds

- 3.3.9 Breeding bird surveys were undertaken between April and June 2019 (Annex B.2). The survey area <sup>(9)</sup> supported a typical assemblage of farmland, grassland and woodland birds. Common raptors including buzzard (*Buteo buteo*) and sparrowhawk (*Accipiter nisus*) were recorded. Breeding wader activity was limited to birds flying over the site, with an active oystercatcher (*Haematopus ostralegus*) nest recorded outwith the survey area, within the existing St Fergus terminal. Six red list Birds of Conservation Concern (BoCC) were recorded within the site; yellowhammer (*Emberiza citronella*), linnet (*Carduelis cannabina*), song thrush (*Turdus philomelos*), skylark (*Alauda arvensis*), grey wagtail (*Motacilla cinerea*) and mistle thrush (*Turdus viscivorus*). These species were assessed as being either probable, or possible breeders on site.
- 3.3.10 Winter Vantage Point (VP) surveys following guidance issued by SNH <sup>(10)</sup> were carried out in 2018/19 (Annex B.3). The majority of observed flights throughout the surveys were by pink-footed (*Anser brachyrhynchus*) and greylag geese (*Anser anser*) travelling to and from the Loch of Strathbeg SPA/Ramsar site at heights between 100-200 m. Ten flights by pink-footed geese at collision risk height crossed the proposed temporary OHL (Table 3.3 and Figure 3.7). Further flights by pink-footed geese at collision risk height were recorded of birds landing in, or alighting from, an inundated field, however none of these flights cross the existing OHL, or location of the

(6) SNH. Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Guidance. Version 1. July 2016.

(7) SNH (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms. March 2017. SNH, Battleby.

(8) Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods. RSPB, Sandy.

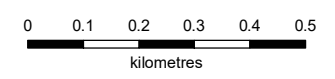
(9) Site plus 250m buffer

(10) SNH. Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Guidance. Version 1. July 2016.

proposed temporary OHL. During the surveys two flocks of pink-footed geese were recorded under the existing OHL and no collisions were observed.



- Vantage Point
- Pink-footed goose
- Whooper swan
- New Cable
- Temporary OHL
- Existing OHL
- CSE Compound
- New Substation
- Old Substation
- Field of View (3 degree orientation)



SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: WB
PROJECT: 0478671	CHECKED: SM
DATE: 20/08/2019	APPROVED: KG

**FIGURE 3.7**  
**ST. FERGUS WINTER VANTAGE POINTS**  
**POTENTIAL COLLISION RISK FLIGHTS**  
**CROSSING TEMPORARY OHL**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus

PROJECTION: British National Grid

SOURCE:

Path: \\ukonsv04\Data\Edinburgh\Projects\0478671 SSE SHETL St Fergus Sub.AB\00 GIS\MAPS\SURVEY\0478671\_BirdSurveyFlightLines\_A01.mxd

**Table 3.3 Winter geese and waterfowl flight data from 2018/19 VP surveys**

Species	Number of flights in the 2km viewshed	Number of birds in flights in the 2km viewshed	Number of flights at collision risk height crossing proposed temporary OHL	Number of birds in flights at collision risk height crossing proposed temporary OHL	Loch of Strathbeg SPA/Ramsar population (11)	% Proportion of Loch of Strathbeg SPA/Ramsar population of flights crossing OHL
Pink footed goose ( <i>Anser brachyrhynchus</i> )	168	3,357	10 <sup>(12)</sup>	319	27,500	1.16
Whooper swan ( <i>Cygnus Cygnus</i> )	13	89	0	n/a	245	0
Greylag goose ( <i>Anser anser</i> )	8	236	0	n/a	5,565	0
Barnacle goose ( <i>Branta leucopsis</i> ),	3	87	0	n/a	520	0
Teal ( <i>Anas crecca</i> );	0	0	0	n/a	1,270	0
Goldeneye ( <i>Bucephala clangula</i> )	0	0	0	n/a	150	0
Unidentified grey geese <sup>(13)</sup>	28	1,467	0	n/a	n/a	0

### 3.3.11 In summary:

- ten flights of pink-footed goose crossed the location of the proposed temporary OHL at collision risk height (Figure 3.7);
- no flights at collision risk height were recorded crossing the proposed temporary OHL from the remaining winter qualifying interest species from the Loch of Strathbeg SPA/ Ramsar – whooper swan, greylag goose, barnacle goose, teal and goldeneye; and
- ninety eight flights of pink-footed goose, twelve flights of whooper swan, seven flights of greylag goose, three flights of barnacle goose and twenty one flights of unidentified grey geese were recorded above collision risk height during the winter VP surveys. The majority of these were flights of birds commuting high above the survey area.

### Protected Mammals

- 3.3.12 Signs for protected species were recorded during both Extended Phase 1 survey visits. The survey included checks for the bat roost potential of trees and structures, signs of badger (*Meles meles*) and otter (*Lutra lutra*) activity and potential red squirrel (*Sciurus vulgaris*) dreys within 100 m of the site boundary. The locations of field evidence of protected fauna and areas suitable for use by protected fauna are marked on the habitat map as target notes and the target note descriptions are provided in Annex B.1.
- 3.3.13 There was no evidence of otter, red squirrel or bats (or suitable roosts) from the records centre information<sup>(14)</sup>, or from the site survey. Trees comprised semi-mature plantation woodland and occasional young/semi-mature trees with no obvious potential bat roost features (loose bark, cracks etc.). No suitable buildings for roosting bats were recorded during the survey, including those within the part of existing St Fergus terminal within the survey area.
- 3.3.14 Records of badger were provided by NESBReC, and a path and associated latrine was noted between the plantation woodland and semi-improved grassland habitats in the survey area. A badger dropping was recorded

(11) SNH i-site Loch of Strathbeg SPA citation <https://sitelink.nature.scot/site/8537>

(12) Three flights with flocks of less than 10 birds, and seven flights with between 20 and 80 birds

(13) Flying too high to identify, well above collision risk height

(14) Received from North East Scotland Biological Records Centre (NESBRC). The search was carried out within a 2 km radius from the approximate centre of the Project site (NK 08655 53612).

165 m to the north-west of the site on a well-used farm track. No setts, or other confirmed pathways were noted during the survey.

#### Designated Sites

- 3.3.15 The nearest designated site to the Project is Rora Moss SSSI, approximately 3.2 km south-west of the site. It is the second largest lowland raised bog in Aberdeenshire with a significant area of uncut dome and associated cut-over areas. The vegetation on the primary bog is dominated by *Calluna vulgaris* (heather) with widespread *Eriophorum vaginatum* (hare's-tail cottongrass) and *Erica tetralix* (cross-leaved heath) and scattered patches of bog mosses, mainly *Sphagnum capillifolium*.
- 3.3.16 The Loch of Strathbeg Special Protection Area (SPA) is approximately 3.8 km north of the site. The qualifying interest features of the Loch of Strathbeg SPA are:
- breeding sandwich tern (*Sterna sandvicensis*);
  - overwintering Svalbard barnacle goose;
  - whooper swan; and
  - greylag goose; pink-footed goose; and
  - wintering waterfowl assemblage <sup>(15)</sup>.
- 3.3.17 The Loch of Strathbeg Site of Special Scientific Interest (SSSI) is approximately 3.5 km north <sup>(16)</sup> of the site. The qualifying interest features are as follows.
- coastlands – sand dune, saltmarsh;
  - freshwater habitats – eutrophic loch;
  - fens – open-water transition fen, fen-meadow; breeding bird assemblage <sup>(17)</sup> ;
  - non-breeding pink-footed goose;
  - non-breeding greylag goose; and
  - non-breeding goldeneye (*Bucephala clangula*).
- 3.3.18 There are no other statutory designated sites within 3 km of the site. One non-statutory designated site is present approximately 1.6 km from the site; the Rattray Head to Peterhead Local Nature Conservation Site (LNCS). This site is designated for a variety of coastal habitats, including sand dunes, and botanical interest. Fields adjacent to the LNCS are important for roosting and feeding geese, waders and wildfowl.

## Assessment and Mitigation

### Habitats

- 3.3.19 The site vegetation clearance plan is provide in Figure 3.8. The Project will result in the loss of approximately 1.4 ha of improved and poor semi-improved grassland and approximately 0.07 ha of marshy grassland. A small area of mixed plantation woodland will be cleared for the temporary overhead line diversion. There will be a temporary loss of an area of poor semi-improved grassland from the use of a temporary site compound. A small area of marshy grassland will be lost to accommodate the Cable Sealing End compound. Along the A90 a section of

---

(15) The winter assemblage of the SPA comprises those species named above plus teal (*Anas crecca*) goldeneye (*Bucephala clangula*)

(16) The boundary is not entirely contiguous with the SPA.

(17) Including mute swan (*Cygnus olor*), shelduck (*Tadorna tadorna*), redshank (*Tringa tetanus*), teal (*Anas crecca*), tufted duck (*Aythya fuligula*), water rail (*Rallus aquaticus*), common tern (*Sterna hirundo*), marsh harrier (*Circus aeruginosus*), sedge warbler (*Acrocephalus schoenobaenus*), grasshopper warbler (*Locustella naevia*) and reed bunting (*Emberiza schoeniclus*).



hedge (scrub – dense/continuous) will be lost to enable the visibility splay for the new junction. Total habitat loss comprises:

- Mixed woodland – plantation – 0.39 ha
- Scrub - dense/continuous – 0.18 ha
- Improved grassland – 0.27 ha
- Marsh/marshy grassland – 0.07 ha
- Poor semi-improved grassland – 1.08 ha
- Cultivated/disturbed land – arable – 0.36 ha

3.3.20 It is considered unlikely that the marshy grassland habitats recorded in the site and 250 m buffer are groundwater fed due to their presence in areas prone to surface water flooding <sup>(18)</sup>. The superficial geology underneath these habitats and the wider survey area comprises fine-grained lacustrine sediments <sup>(19)</sup>, which are of low permeability. This also suggests none of the habitats in the area surveyed are groundwater fed.

3.3.21 Given the limited ecological value of the habitats affected and the relatively small area of the footprint, significant effects on habitats or flora are not predicted.

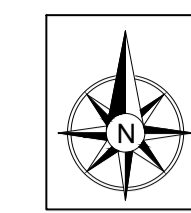
3.3.22 Mitigation planting will replace existing mixed-plantation woodland cleared for the temporary diversion and junction and poor semi-improved grassland lost under the temporary compound will be re-sown. Replacement planting will not replace trees within 10 metres of the outside conductor of the final position of overhead line between towers 206R (the CSE) and 207 because a 10 metre resilience felling corridor is anticipated in future. Other than Ebbinge's silverberry, species used will be native and of local provenance including those found during the Extended Phase 1 survey (Annex B.1). Ebbinge's silverberry is proposed as an effective species for screening purposes in a coastal environment.

3.3.23 A Construction Environmental Management Plan (CEMP) will be produced and the implementation of the measures in it will be overseen by an Ecology Clerk of Works (ECoW), who will be present on site during construction.

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(18) <http://map.sepa.org.uk/floodmap/map.htm> (accessed 29.08.19)

(19) <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>



DRAWING STATUS:  
FOR INFORMATION

SSEN CONTRACT NUMBER	LT197	
SSEN MDR NUMBER	0011-SFEE-DWG-0802-1-001-002	
SSEN REVISION	DATE	HISTORY
01	01/05/20	FIRST ISSUE
02	08/09/20	UPDATED COMPOUND AT TOWER 206.
03		
04		

KEY

<span style="color: blue;">■</span>	Timber clearance <7cm
<span style="color: magenta;">■</span>	Timber clearance >7cm
<span style="color: orange;">■</span>	Gorse clearance
<span style="color: green;">■</span>	Soil Stripping
<span style="color: black;">---</span>	132kV Cable Route
<span style="color: magenta;">---</span>	F.O. Cable Route



**DRAFT**

ISSUE	P04	REMARKS:	UPDATED COMPOUND AT TOWER 206.
DRAWN	GM	CHKD 1	PH
CHKD 2	-	APPD	JC
DATE	08/09/2020	ISSUE	P03
REMARKS:	UPDATED TO REMOVE THE RESILIENCE FELLING	DRAWN	PH
CHKD 1	DS	CHKD 2	-
APPD	JD	DATE	13/07/2020
ISSUE	P02	REMARKS:	UPDATED AS PER SSEN COMMENTS
DRAWN	PH	CHKD 1	DS
CHKD 2	-	APPD	JD
DATE	10/06/2020	ISSUE	P01
REMARKS:	FIRST ISSUE	DRAWN	PH
CHKD 1	-	CHKD 2	-
APPD	-	DATE	-

CIRCUIT: SA1 / SA2



FIGURE .  
I E E R E

DRAWN	PH	DATE	23/04/2020	ACAD
CHKD 1	GM	DESIGN	-	A1
CHKD 2	-	APPD	JC	

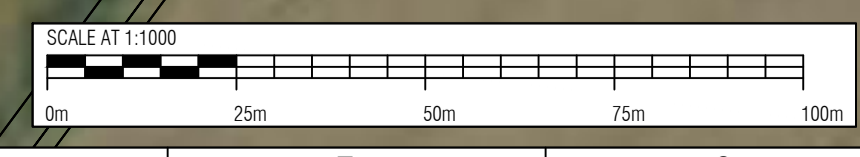
PROJECT: ST FERGUS EAST 132kV/11kV S/S  
JOB NUMBER: ULASS362



SCALE: 1:1000 SHEET: 1 OF 1

BIM CODE:	5C613M-PTDO-OHLLA-XX_XX-DR-LDO-200005
ISSUE:	P04
STATUS:	S3

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## Birds

- 3.3.24 If works take place during the breeding season, there is the potential for the proposed works to result in disturbance to red list BoCC possible/probable breeders identified during the surveys. These include both meadow pipit and skylark which are ground-nesting species. Whilst no waders were recorded on site during the breeding bird surveys three snipe (*Gallinago gallinago*) were flushed during the November Extended Phase 1 Habitat Survey and the marshy grassland forms suitable breeding habitat.
- 3.3.25 SHE Transmission has a well-established “Bird Species Protection Plan (Bird SPP)” which was developed in consultation with Scottish Natural Heritage (SNH) and is currently being used during other SHE Transmission projects. This will be implemented for the proposed works at St Fergus (Annex B.4). As with the CEMP above, an ECoW will attend site on a regular basis throughout the construction period to confirm that the measures within the SPP are implemented as required.
- 3.3.26 The approach in the Bird SPP includes undertaking pre-construction surveys for nesting birds. If active nests are found, appropriate buffers to avoid disturbance will be set up until young have fledged. The protection of breeding birds will be informed by advice from a suitably qualified ecologist. As a result of the relatively small areas of habitat affected, and with measures from the Bird SPP in place, no significant impacts on breeding birds are predicted.
- 3.3.27 If the works take place outside of the bird breeding season, there is the potential for the temporary OHL to result in collision impacts with wintering wildfowl (principally geese and swans) which are qualifying interest features of the Loch of Strathbeg SPA and Site of Special Scientific Interest <sup>(20)</sup>. Construction works may also result in the disturbance of foraging wildfowl.
- 3.3.28 During surveys, a total of 220 flights of geese and swans were recorded. Of these 10 flights <sup>(21)</sup> crossed the existing line at potential collision height along the section where the temporary OHL will be installed. Geese were recorded feeding in fields under the existing line and taking off and flying through the existing lines during which time no collisions with the existing lines were recorded. As a proportion of the SPA population, the number of collision risk flights from whooper swan and pink footed geese was low (Table 3.3). The avoidance rates of geese at wind farms are very high <sup>(22)</sup> and it is expected to be similar for OHLs.
- 3.3.29 The majority of geese and swan flights were observed high above the survey area, well above collision risk height traveling to and from the Loch of Strathbeg area, 3.4 km to the north and would not be affected by the works. Given the relatively low number of flights recorded, the short distance of the temporary line (approximately 600 m), the short period that it will be in place (a maximum of six months), and the high avoidance rates for geese and swans, should works take place over the winter months no significant impacts are predicted.
- 3.3.30 If the works are undertaken outwith the migration and wintering seasons, then no collision impacts on wintering geese and swan species are predicted. It is not yet confirmed whether works will take place in the breeding or winter season, however it is like that works will take place between May - August.
- 3.3.31 In relation to loss of winter foraging habitat, the total area of foraging habitat for these species that would be lost is small (approximately 1 ha). Temporary disturbance impacts may displace birds from a wider area than this. However geese and swans from Loch of Strathbeg are known to forage up to 20 km from overnight roosts at the Loch, and have access to abundant alternative similar foraging habitat <sup>(23)</sup> <sup>(24)</sup>. As a result, if the works are undertaken during the migration and wintering seasons, the loss of foraging habitat area is not predicted to have a significant effect.
- 3.3.32 No other waterfowl species were recorded during surveys.

## Protected Mammals

- 3.3.33 No significant effects are predicted for otter, red squirrel or bats from works during construction or operation. The

---

(20) the relevant SSSI qualifying features are non-breeding pink-footed goose and greylag goose.

(21) Three flights with flocks of less than 10 birds, and seven flights with between 20 and 80 birds

(22) SNH (2017) Avoidance Rates for onshore SNH Wind Farm Collision Risk Model. Scottish Natural Heritage.

(23) see Mitchell (2012). Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland. (distribution maps for pink footed geese foraging areas 20 km of the Loch of Strathbeg SPA (p56-7).

(24) <https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/managing-geese/loch-strathbeg-local-geese-management-scheme> (accessed 26.08.19).

grassland to be lost to construction has little value to these species except as a foraging resource for badger. However, as the wider area is dominated by improved and poor semi-improved grassland the loss of foraging habitat for badgers is not considered significant. SHE Transmission's "Badger Species Protection Plan (Badger SPP)" (Annex B.5) will be implemented to avoid effects on badger during the works. All exposed trenches and holes should be provided with mammal exit ramps e.g. wooden planks or earth ramps when Contractors are off site and a pre-construction check by a suitably qualified ecologist to ensure no setts have been constructed in the vicinity.

#### Designated Sites

- 3.3.34 No effects are expected on the Rora Moss SSSI given its distance from the site.
- 3.3.35 No effects are expected on the Loch of Strathbeg SPA/Ramsar site. Breeding sandwich tern is not likely to occur on the site as they are primarily a coastal and marine species.
- 3.3.36 No significant effects are expected on the winter qualifying interest species as described above.
- 3.3.37 No significant effects are predicted to the Rosa Moss SSSI given the distance from the site.
- 3.3.38 No significant effects are predicted to Rattray Head to Peterhead Local Nature Conservation Site (LNCS) given its distance from the site, and the abundance of grazing habitat in the area available for foraging birds.

#### Summary

The appraisal of ecology is summarised in Table 3.4.

**Table 3.4 Appraisal of Ecology**

Environmental Feature	Project Interaction	Mitigation Measures	Receptor sensitivity	Magnitude of effect	Significance of effect
Habitats	Loss of habitat	Avoidance of most sensitive areas through siting. Replacement tree-planting.	Low	Low	Minor
Birds (non SPA/SSSI)	Loss of habitat/Disturbance during construction.	Bird Species Protection Plan (SPP) applied through CEMP.	Low	Low	Minor
Badger	Loss of habitat/Disturbance during construction.	Badger Species Protection Plan (SPP) applied through CEMP.	Low	Negligible	Not significant
Loch of Strathbeg – barnacle goose, whooper swan, greylag goose, pink-footed goose, and winter waterfowl assemblage	Potential collision risk from flights into temporary overhead lines	Bird Species Protection Plan (SPP) applied through CEMP.	Medium-High	Negligible <sup>(25)</sup>	Not significant

(25) SPA species but not flying across the site in significant numbers.

## 3.4 Cultural Heritage

### Introduction

- 3.4.1 This section presents an appraisal of the potential for the St Fergus Gas Substation to impact upon on cultural heritage receptors. The full baseline including Site Gazetteer is provided in Annex D. The proposed substation, cable route, temporary overhead line (OHL), tension tower and cable sealing end (CSE) compound are referred to as the “project site”.

### Baseline

- 3.4.2 There are no designated heritage assets on the project site, although the cable route does cross an area of cropmarks recorded by the Aberdeenshire Archaeology Service Historic Environment Record (HER) and identified from a 1946 aerial photograph (106G/Scot/UK/0110-Frame 4335). A number of pits have been identified within the cropmark (Site 9) which are suspected to be of prehistoric date. There are no designated assets within the 500 m Study Area, and due to the presence of St Fergus Gas Terminal to the east of the project site, visibility between the project site and the nearest designated assets is prohibited.
- 3.4.3 There is a paucity of prehistoric, Roman, Early Historic and medieval remains recorded within the 500 m study area. An undated cist was found to the south west to the project site in 1886, although the cist, and its contents were irretrievable in 1968 and appears to have been lost. The NRHE and Aberdeenshire HER record a number of non-designated heritage assets within the 500 m study area, which reflect the post medieval and modern dispersed farmstead and agricultural nature of the surrounding landscape.
- 3.4.4 The project site is recorded as being located in undeveloped, agricultural land on historic mapping, with a stream known as the Black Water roughly aligned north west to south east surrounding the project site to the west and south. A precursor to the modern A90 bound the project site to the east from at least 1776 (Taylor & Skinner). Historic mapping records the project site located within a wider landscape occupied by dispersed, small, named farmsteads and agricultural land to the north of St Fergus. Extant and historic farm names within the Study Area are recorded by Pont in 1560-1614, Blaeu in 1646 and Gordon in 1636-52. Several farms in the area are referred to as “Essie” which suggests that the settlements in the area may well have pre post medieval antecedents. Heathland and a number of pits, potentially small-scale extraction activities are evidenced in the Study Area by place names. St Fergus Gas Terminal was built to the east of the project site in 1975, and an OHL is recorded as crossing the project site on the Ordnance Survey map of 1983.

### Assessment

#### Direct effects

- 3.4.5 There is judged to be Low potential for prehistoric and Roman remains to survive within the project site. Whilst the post-medieval farmsteads recorded within the Study Area are likely to have earlier antecedents it is highly likely that the Project site has been located in agricultural and wet land for some time. Notwithstanding historic agricultural remains there is judged to be a low potential for Early Historic, medieval, post medieval and modern remains to survive. The Archaeology Service at Aberdeenshire Council have advised that archaeological remains have been known to survive in the area buried beneath deep plough soils and as such there is the possibility of uncovering hitherto unknown archaeological remains on the project site.
- 3.4.6 National planning policies and planning guidance, SPP (Scottish Government 2014), HEPS (Historic Environment Scotland 2019) and PAN2/2011 (Scottish Government 2011), as well as the local plan policies (Aberdeenshire Local Development Plan, 2017), outlined in Section 2.3 of Annex D, require a mitigation response that is designed to take cognisance of the potential for archaeological remains within the project site to be impacted upon and hence allow the preservation or recording of any significant remains which may be present. Although the potential for buried archaeological remains to be present is considered to be low it cannot be discounted and consequently a programme to mitigate the effects of any direct impacts is recommended; this would be in accordance with national and local planning policies on heritage.
- 3.4.7 Consultation has been undertaken with the Aberdeenshire Archaeology Service, archaeological advisors to Aberdeenshire Council. Aberdeenshire Archaeology Service require a watching brief or monitored topsoil strip to be undertaken on all ground-breaking works. If significant features are encountered and preservation in situ is

not feasible, further archaeological works, including full excavation and a programme of post-excavation works may be required, and would be agreed in advance with Aberdeenshire Archaeology Service.

#### Indirect effects

- 3.4.8 In cultural heritage terms, an indirect impact refers to any change in the baseline condition of a heritage asset resulting from a development beyond the boundaries of the asset. Indirect impacts can have a variety of forms for instance if a development affects the water table, it could potentially damage the preservation of organic remains within buried archaeological contexts beyond its boundaries. However, the majority of indirect impacts result from changes to the settings of heritage assets as a consequence of new development.
- 3.4.9 There are no designated heritage assets within the 500 m Study Area and intervisibility between nearby designated heritage assets is prohibited by St Fergus Gas Terminal to the east to the project site. Due to the nature of the proposed development and the proximity of St Fergus Gas Terminal there will be no impact on the setting of non-designated farms within the study area.
- 3.4.10 The appraisal of cultural heritage is summarised in Table 3.5

**Table 3.5 Appraisal of Cultural Heritage**

Environmental Feature	Project Interaction	Mitigation Measures	Receptor Sensitivity	Magnitude of effect	Significance of effect
Potential buried archaeological remains	Direct during construction	A watching brief or monitored topsoil strip shall be undertaken on all ground-breaking works. If significant features are encountered and preservation in situ is not feasible, further archaeological works, including full excavation and a programme of post-excavation works may be required, and would need to be agreed in advance with Aberdeenshire Archaeology Service.	Unknown	Unknown	Unknown

## 3.5 Geology, Hydrology and Hydrogeology

### Introduction

- 3.5.1 This chapter provides an appraisal of the potential effects of the St Fergus Gas Substation upon geology, hydrology and hydrogeology receptors. A summary is provided below and the full Flood Risk Assessment (FRA) is provided in Annex E.
- 3.5.2 The following information sources have informed the appraisal of geology, hydrology and hydrogeology.
- Areas at risk of flooding (Scottish Environment Protection Agency (SEPA) Flood Map <sup>(26)</sup>);
  - Waterbodies monitored under the Water Framework Directive;
  - Drinking Water Protected Areas;
  - Private Water supplies;
  - Geological Conservation Review Sites and SSSIs;
  - The Hydrological Map of Scotland, available at <http://www.largeimages.bgs.ac.uk/iip/hydromaps.html?id=scotland.jp2>;
  - BGS GeoIndex Onshore Website, available at <http://mapapps2.bgs.ac.uk/geoindex/home.html>;
  - Water Environment Hub, Scottish Environment Protection Agency (SEPA); and
  - Google aerial imagery dated from 2005 to 2019.

### Site History

- 3.5.3 Google aerial imagery dated from 2005 to 2019 indicates that the project site is and has been occupied by agricultural land.
- 3.5.4 The surrounding area is predominantly occupied by agricultural land with the A90 road located adjacent to the eastern boundary of the project site. Beyond the road is the St Fergus Gas Terminal which is listed as a top tier Control of Major Accident Hazards (COMAH). The gas terminal was built in 1977 to process natural gas.
- 3.5.5 Geotechnical and environmental ground investigation will be carried out to provide information on the underlying ground conditions and potential contamination from offsite or historical site sources.

### Baseline

#### Hydrology

- 3.5.6 The closest watercourse is the Black Water, a relatively small watercourse which flows in a south easterly direction approximately 100 m to the south west of the proposed substation. The Black Water is monitored on an annual basis to assess its condition and establish its overall classification under the Water Framework Directive. At present, the overall condition of the Black Water is classified as 'bad' (SEPA 2017) <sup>(27)</sup>, with the watercourses over all status failing due to consistent bad classifications for ecology, hydromorphology and morphology.
- 3.5.7 Screening as part of the Flood Risk Assessment (FRA) was undertaken for sources of Flood Risk including: coastal/tidal, river, surface water, groundwater, sewers and artificial drainage systems, water supply and infrastructure failure (i.e. reservoirs, canals, culvert blockage, etc.).
- 3.5.8 With reference to Flood Maps published by SEPA, the site does not fall within a coastal flooding risk area.
- 3.5.9 The SEPA flood mapping indicates that part of the project site, the new terminal tower, is located within a high risk area for fluvial flooding in relation to Black Water (10% Annual Exceedance Probability (AEP), 1 in 10 chance). The proposed location of the substation does not fall within an area at risk of fluvial flooding.
- 3.5.10 A small pond is located approximately 15 m to the south west of the proposed substation fence boundary and approximately 20 m north east of the CSE compound. The majority of the site lies within an area of low risk of surface water flooding (up to 0.1% AEP, 1 in 1000 chance). A localised area to the north east of the project site lies within an area of high likelihood of surface water flooding (10% AEP, 1 in 10 chance), which is likely due to a

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(26) <http://map.sepa.org.uk/floodmap/map.htm>

(27) <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>

minor depression in the land surface in this area, resulting in an area of ponding within the modelling used to derive the likelihood of surface water flooding maps.

## Baseline

### Geology and Hydrogeology

- 3.5.11 The project site is located approximately 2 km west inland from the North Sea coast at St Fergus, at an elevation of just 7m Above Ordnance Datum (AOD). The project site is underlain by the Lacustrine Superficial Deposits comprising clay, silt and sand. The superficial deposits are underlain by the Crinan and Tayvallich Subgroup Metamorphic Bedrock comprising semipelite, pelite and psammite.
- 3.5.12 The closest designated sites of geological value are Loch of Strathberg SSSI, which is designated for its varied dune topography and of Kirkhill SSSI which is designated for its Quaternary glacial deposits. These sites are located approximately 3.5 km south and approximately 7.6 km east of the site respectively.
- 3.5.13 The Superficial Lacustrine Deposits comprise clay, silt and sand and are known to be aquifers of limited or local potential. BGS borehole logs located in the vicinity of the project area indicate that groundwater was encountered at approximately 3 m below ground level.
- 3.5.14 The Hydrological Map of Scotland indicates that the project site is underlain by a precambrian bedrock where areas are underlain by impermeable rock, generally without groundwater except at shallow depths. According to the BGS GeoIndex website, which describes the productivity of aquifers, the underlying bedrock formation has been described as a low productivity aquifer.
- 3.5.15 Scottish Environment Protection Agency (SEPA) classified the underlying groundwater (known as the Fraserburgh Aquifer) quality in the area of the Site as having good overall status in 2014.
- 3.5.16 The site is not within a drinking water protected area. The closest Private Water Supply is a Type B supply at Shielhill House approximately 1.4 km to the south west of the CSE compound.

## Assessment

### Hydrology

- 3.5.17 The FRA (Annex D) concludes that there is a negligible risk of flooding from sources such as coastal, groundwater or infrastructure failure. Flood risk from surface water was also found to be negligible, despite a localised area to the north east of the project site located within an area of high likelihood of surface water flooding (10% AEP, 1 in 10 chance). A negligible risk was concluded due to ponding into undulations in ground levels rather than an area at risk of overland flow.
- 3.5.18 The FRA found the project site's risk to fluvial flooding requiring further assessment. The proposed location of the CSE compound and new tower is located within a high risk area for fluvial flooding in relation to Black Water. It is considered unlikely that the construction of an open lattice steel tower structure and CSE will have any significant effect on flood flows, or displace quantifiable volumes of flood water which would potentially impact upon other sensitive receptors within the catchment. Other areas of the project site including the substation and access road were found to be of negligible risk of fluvial flooding. There is adequate provision for emergency ingress/egress directly from the A90.
- 3.5.19 As the only part of the project site in the area of fluvial flood risk is the proposed CSE compound and new tower, this structure is unlikely to displace a significant volume of flood water or alter flow regime in a manner that would increase flood risk to other receptors within the Black Water catchment. However, care will need to be taken during the construction of the tower and CSE compound to ensure site activities do not cause adverse impacts in the event of a flood. Flooding during construction could result in the mobilisation of unconsolidated sediments (in the event of water flowing into excavations) or wash away potentially polluting materials if they are not appropriately stored.
- 3.5.20 An attenuation basin will be formed in an area south of the substation the dimensions of which will be confirmed at detailed design stage.



## Assessment

### Geology and Hydrogeology

- 3.5.21 Due to the distance from the project site and the localised nature of associated works no geological designations will be effected by the proposed development.
- 3.5.22 Given the distance of separation and topography no impact on private water supplies are likely.
- 3.5.23 Construction will result in temporary disturbance of soils. This will be removed and reinstated in accordance with the General Environmental Management Plan (see Annex F).
- 3.5.24 There is potential for local groundwater to underlie the project site which is classified by SEPA as of good quality. There is potential for effects on groundwater during construction due to release of unforeseen contamination as a result of offsite and historical site activities. Ground investigation will be conducted and, should contaminants be found, measures agreed with Aberdeenshire Council and SEPA to mitigate potential effects on soil and groundwater condition.

## Mitigation

- 3.5.25 Relevant sections of the SHE Transmission General Environmental Management Plans (GEMPs) will be built in to a CEMP to be implemented by the project's selected contractor. This will mitigate the potential for impact to waterbodies during construction. GEMPs are included as Annex F to this report and relevant GEMPs include:
- GEMP 2 - Working in or near surface waters
  - GEMP 4 - Soil removal, storage and reinstatement
  - GEMP 5 - Unexpected Contaminated Land
  - GEMP 7 - Oil Storage and Refuelling
  - GEMP 11 - Bad Weather
- 3.5.26 The following requirements should be included in the construction environmental management plan to reduce the risk of pollution resulting from a flood event:
- The construction contractor should utilise the SEPA flood warning service to ensure all site activities are planned appropriately.
  - No materials will be stored adjacent to banks or within the flood zone.
  - In the event of a flood warning on the Black Water being issued, excavations within the flood zone should be back filled to reduce the risk of materials becoming mobilised and washed down stream.
- 3.5.27 Transformers (which contain oil) will be located internally within secondary containment concrete bunds which will be designed to accommodate a minimum of 110% of the volume of oil in the transformers. A diesel generator for emergency/standby electrical supplies to the site will be located within the compound. Secondary containment for the diesel fuel storage tank will be designed in the same way as the transformers.
- 3.5.28 A Construction Site Licence will be required and obtained in accordance with the Controlled Activity Regulations (CAR) from SEPA prior to any construction works commencing on site. The Licence will specify the controls and measures that would be used at site to safeguard the water environment.
- 3.5.29 Once ground investigation works are complete, the final detailed drainage design will be agreed with Aberdeenshire Council to confirm that there is no increase in flood risk.
- 3.5.30 An assessment taking into consideration identified mitigation is summarised in Table 3.6.

**Table 3.6 Appraisal of Geology, Hydrology and Hydrogeology**

Environmental Feature	Project Interaction	Mitigation Measures	Receptor sensitivity	Magnitude of effect following mitigation	Significance of effect
Soils	Direct temporary during construction	GEMP as implemented by CEMP	Medium	Low	Minor
Flood risk	Loss of capacity or conveyance during operation.	The final detailed drainage design will be agreed with Aberdeenshire Council to confirm that there is no increase in flood risk.	Medium	Negligible	Negligible
Black Water watercourse	Direct and temporary mobilisation of sediments in the event of a flood during construction.	Construction site drainage to be designed in accordance with GEMP as implemented by CEMP.	Medium	Negligible	Negligible
Black Water watercourse	Direct and temporary pollution of the watercourse in the event of a spillage during operation.	Secondary containment of oil containing plant including transformers and storage tanks.	Medium	Negligible	Negligible
Superficial Groundwater	Direct and temporary pollution of groundwater in the event of a spillage during operation.	Secondary containment of oil containing plant including transformers and storage tanks.	Medium	Negligible	Negligible
Superficial Groundwater	Direct temporary during construction due to release of potential contaminants.	Ground investigation to identify potential contaminants and mitigation agreed with Aberdeenshire Council and SEPA as required.  GEMP as implemented by CEMP.	Medium	Low	Minor
Black Water watercourse	Direct temporary during construction due to release of potential contaminants and sediment	A Construction Site Licence will be required and obtained in accordance with the Controlled Activity Regulations (CAR) from SEPA  The SEPA flood warning service to ensure all site activities are planned appropriately.  No materials will be stored adjacent to banks or within the flood zone.  In the event of a flood warning on the Black Water being issued, excavations within the flood zone should be	Medium	Negligible	Negligible

		back filled to reduce the risk of materials becoming mobilised and washed down stream.			
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### 3.6 Traffic and Transport

#### Access

- 3.6.1 A new permanent junction with the A90 will be constructed for access to the site during construction and operation. The design of the access junction will comply with relevant highway design standards for the trunk road network and will be agreed in consultation with Transport Scotland.
- 3.6.2 During the construction phase of the new substation there will be a requirement for access to, and egress from, the site by heavy goods vehicles (HGVs) and light traffic. The majority of traffic will approach the site from the south using the A90. Access to the substation will be via a new access road directly off the A90. A new bellmouth junction will be formed in agreement with Transport Scotland. The transformers are likely to be delivered to Peterhead Port in accordance with Transport Scotland's Water Preferred Policy.

#### Construction Traffic

- 3.6.3 Department for Transport (DfT) traffic count point data is available for two points along the proposed project construction traffic routes; the A90 St Fergus and the A90 north of Rathan. In 2018 estimates of the average annual daily flow (AADF)<sup>(28)</sup> of all motor vehicles at these points was 5,976 and 8,536 respectively.
- 3.6.4 General construction traffic, including both light and heavy vehicles, is summarised in Table 3.7. The average volume of construction traffic will result in a change in traffic flow of less than 1% and is not considered likely to result in a material impact on road safety, severance, pedestrian fear or intimidation.

**Table 3.7 General Construction Vehicle Numbers**

Phase	Peak Light Vehicles/ Day	Peak Heavy Vehicles/ Day
Civil Engineering	30	15
Electrical	10	10

Notes:

1. Vehicle numbers are two-way traffic flows.
2. The civil engineering and electrical phases would not occur concurrently.
3. The above are initial estimates only. Actual movement depend on Contractor's plant and working methods.
4. The Principal Contractor, once appointed, will provide a detailed Construction Traffic Management Plan.
5. Light Vehicles less than 18 tonnes. Heavy vehicles 18-44 tonnes

- 3.6.14 Abnormal Indivisible Load (AIL) deliveries to the Site will be required for the delivery of the 132 / 11 kV Transformers. Further consultation and notification will be undertaken with Aberdeenshire Council and the police once details have been finalised to make sure that traffic impacts on the road network are minimised and emergency access is provided at all times.
- 3.6.15 Details will include the selection of delivery times which would avoid peak times and use of police escort vehicles when required to manage the deliveries and facilitate safe interaction with other road users. Road signage will be implemented to provide advanced warning of abnormal load movements. A SSEN Community Liaison Manager will be appointed to the project to ensure that the local community and the general public have enough information to plan their journey and avoid abnormal load movements.
- 3.6.16 The presence of slow-moving abnormal loads on the road network may cause some short-term congestion. However, this would be temporary, short-term and minor.
- 3.6.17 Pre-construction the contractor will share a Construction Traffic Management Plan with Aberdeenshire Council and Transport Scotland identifying appropriate and safe routes for construction traffic which will include the following mitigation measures.

<sup>28</sup> An AADF is the average over a full year of the number of vehicles passing a point in the road network each day.

- The Contractor will liaise with Aberdeenshire Council and Transport Scotland to determine appropriate traffic management arrangements for construction vehicle movements;
- The Contractor will agree appropriate and safe routes to and from the site with Aberdeenshire Council and Transport Scotland. All construction vehicles will be required to use approved access routes;
- Movement of abnormal loads will be restricted to take place outside peak flow hours to minimise disruption to general traffic flows;
- Measures will be implemented to minimise dust and dirt being deposited on the carriageway due to construction operations;
- Appropriate signage warning other motorists of the presence of construction vehicles will be implemented, where appropriate;
- Appropriate signage restricting vehicle speeds will be considered in discussion with the relevant Local Authorities and Transport Scotland;
- Police escort or other escort approved by Police Scotland will accompany abnormal load vehicle movements for the delivery of transformer components or any other loads deemed necessary by the road's authorities;
- Where required, traffic will be stopped in the opposite direction to enable abnormal loads to negotiate pinch points along the route; and
- Use of the Construction Environmental Management Plan (CEMP) to monitor and ensure that agreed mitigation measures are being implemented.

### Operational Traffic

3.6.18 The substation will be unmanned. Regular site inspections will be undertaken and visits will be required for switchgear operation. A light vehicle is expected to visit the site once per week during normal operation. In addition, it is likely that maintenance would be completed for about one week during each year. During a maintenance period four or five vehicles per day would attend the site. Additional visits to the substation would be required in event of faults or in the event of any future project works.

3.6.19 A summary of the appraisal of traffic is provided in Table 3.8.

**Table 3.8 Appraisal of Traffic**

Environmental Feature	Project Interaction	Mitigation Measures	Receptor Sensitivity	Magnitude of effect	Significance of effect
Other road users	Construction traffic	Construction Traffic Management Plan (CTMP) to be provided to Aberdeenshire Council pre construction. See mitigation above.	Medium	Negligible	Negligible
Other road users	Abnormal Indivisible loads	<p>Consultation and notification with Aberdeenshire Council and the police.</p> <p>Road signage to provide advanced warning of abnormal load movements.</p> <p>A SSEN Community Liaison officer will communicate information regarding abnormal load movements.</p> <p>CTMP</p>	Medium	Negligible	Negligible

### 3.7 Land Use and Recreation

#### Agriculture

Land use at the site is agricultural with a land capability for agriculture classification of 3.2, land capable of supporting mixed agriculture. There will be no loss of prime agricultural land.

#### Forestry

Limited tree removal will be required to enable the temporary OHL diversion. After removal of the temporary OHL diversion this area will be restocked in consultation with Scottish Forestry.

#### Recreation

No core paths or other recreational receptors are affected by the project.

**Table 3.9 Appraisal of Agriculture, Forestry and Recreation**

Environmental Feature	Project Interaction	Mitigation Measures	Receptor Sensitivity	Magnitude of effect	Significance of effect
Agriculture	Loss of grade 3.2 land	n/a	Medium	Negligible	Negligible
Forestry	Tree removal during temporary OHL diversion	Area to be restocked in consultation with Scottish Forestry	Medium	Negligible	Negligible

## 4. MITIGATION PROPOSALS

4.1.1 A summary of the key mitigation measures considered to reduce the potential effects of the St Fergus Gas132/11 kV Substation are described in Table 4.1.

**Table 4.1 Mitigation Summary**

Topic	Mitigation Measure
General	A Construction Environmental Management Plan (CEMP) will be developed and implemented.
General	An Ecological Clerk of Works (ECoW) will be employed to advise on site specific issues during construction.
General	SHE Transmission's General Environmental Plans (see Annex F) will be implemented through the CEMP
Landscape	In order to mitigate the visual impact of the proposed substation during operation, it is proposed that a 12 m wide tree belt be planted around the perimeter of the substation site. This tree belt should also continue parallel to the A90 along the frontage of the site to offset hedgerow loss. Planting along the western boundary requires to consider the location of a proposed underground electricity cable and therefore the species mix is restricted to shrub and smaller tree species such as birch and alder.
Badgers	Implementation of the SHE Transmission Badger Species Protection Plan. This will include exposed trenches and holes to be provided with mammal exit ramps and a pre-construction check by a suitably qualified ecologist to ensure no setts have been constructed in the vicinity.
Birds	Implementation of the SHE Transmission Bird Species Protection Plan. This will include pre-construction surveys for nesting birds.
Habitat	Mitigation planting will replace habitat lost and poor semi-improved grassland lost under the temporary compound will be re-sown.
Cultural Heritage	A watching brief or monitored topsoil strip shall be undertaken on all ground-breaking works. If significant features are encountered and preservation in situ is not feasible, further archaeological works, including full excavation and a programme of post-excavation works may be required, and would need to be agreed in advance with Aberdeenshire Archaeology Service.
Flood Risk	The final detailed drainage design will be agreed with Aberdeenshire Council to confirm that there is no increase in flood risk. This will include details of the proposed attenuation basin.
Flood Risk	No materials will be stored adjacent to banks or within the flood zone.
Flood Risk	The construction contractor should utilise the SEPA flood warning service to ensure all site activities are planned appropriately.
Flood Risk	In the event of a flood warning on the Black Water being issued, excavations within the flood zone should be back filled to reduce the risk of materials becoming mobilised and washed down stream.
Superficial Groundwater	Secondary containment of oil containing plant including transformers and storage tanks.
Superficial Groundwater	Ground investigation to identify potential contaminants and mitigation to be agreed with Aberdeenshire Council and SEPA as required.
Surface Water	A Construction Site Licence will be required and obtained from SEPA in accordance with the Controlled Activity Regulations (CAR) prior to any construction works commencing on site.

Topic	Mitigation Measure
Construction traffic	Construction Traffic Management Plan (CTMP) to be provided to Aberdeenshire Council pre construction. See section 3.6.17 for proposed content.
Abnormal Indivisible loads	A SSEN Community Liaison officer will communicate information regarding abnormal load movements.
Forestry	Area of tree loss for temporary overhead line diversion to be restocked in consultation with Scottish Forestry.



## **ANNEX A - PHOTOMONTAGES**

## **ANNEX B.1 - EXTENDED PHASE 1 SURVEY**

## **ANNEX B.2 - BREEDING BIRD SURVEY**

## **ANNEX B.3 - WINTER VANTAGE POINT SURVEY SUMMARY**

## **ANNEX B.4 - BIRD SPECIES PROTECTION PLAN**

## **ANNEX B.5 - BADGER SPECIES PROTECTION PLAN**

## **ANNEX C - CULTURAL HERITAGE DESK BASED ASSESSMENT AND SITE GAZETTEER**

## **ANNEX D - FLOOD RISK ASSESSMENT**



## **ANNEX E - NOISE ASSESSMENT**

## **ANNEX F - GENERAL ENVIRONMENTAL MANAGEMENT PLANS (GEMPS)**