The Sizewell C Project

9.120 Comments on Earlier Deadlines, Subsequent Written Submissions to ISH11-14 and Comments on Responses to Change Request 19 - Appendices - Part 2 of 4

Revision:	1.0
Applicable Regulation:	Regulation 5(2)(q)
PINS Reference Number:	EN010012

October 2021

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

SizewellC
Doing the power of good for Britain
EDF CGN

APPENDICES

Part 1 of 4

APPENDIX A: RESPONSE TO THE ENVIRONMENT AGENCY'S COMMENTS ON THE FISH IMPINGEMENT AND ENTRAINMENT MONITORING PLAN [REP8-160] 1

APPENDIX B: RESPONSE TO THE ENVIRONMENT AGENCY'S ISH10 WRITTEN SUMMARIES OF ORAL SUBMISSIONS 2

APPENDIX C: EMAIL CORRESPONDENCE FROM SZC CO. TO THE ENVIRONMENT AGENCY ON SIZEWELL LINK ROAD 3

APPENDIX D: COPIES OF CORRESPONDENCE WITH DAVID AND BELINDA GRANT 4

APPENDIX E: COPIES OF CORREPSONDENCE WITH JUSTIN AND EMMA DOWLEY 5

APPENDIX F: COPIES OF CORREPSONDENCE WITH MOLLETT'S FARM 6

APPENDIX G: COPIES OF CORREPONDENCE WITH MR AND MRS LACEY 7

APPENDIX H: COPIES OF CORRESPONDENCE WITH MR MELLEN 8

Part 2 of 4

APPENDIX I: COPIES OF CORRESPONDENCE WITH MR JOHNSTON 9

APPENDIX J: COPIES OF CORRESPONDENCE WITH MR AND MRS BODEN 10

APPENDIX K: COPIES OF CORRESPONDENCE WITH FERN 11

APPENDIX L: RESPONSE TO TOGETHER AGAINST SIZEWELL C COMMENTS ON MARINE ECOLOGY 12

APPENDIX M: RESPONSE TO NATURAL ENGALND ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 6 13

APPENDIX N: RESPONSE TO NATURAL ENGLAND ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 8 14

APPENDIX O: BIODIVERSITY NET GAIN NOTE 15

Part 3 of 4

APPENDIX P: SIZEWELL LINK ROAD ARBORICULTURAL SURVEY 16

Part 4 of 4

APPENDIX Q: TWO VILLAGE BYPASS ARBORICULTURAL SURVEY 17

APPENDIX R: FIGURES SHOWING THE LOCATION OF VETERAN TREES (SIZEWELL LINK ROAD AND TWO VILLAGE BYPASS) 18

APPENDIX S: RESPONSE TO TOGETHER AGAINST SIZEWELL C ON CHANGE REQUEST 19 19

APPENDIX T: UPDATED SUMMARY OF LANDOWNER ENGAGEMENT ON THE MAIN DEVELOPMENT SITE COASTAL FLOOD RISK 20

APPENDIX I: COPIES OF CORRESPONDENCE WITH MR JOHNSTON

12 October 2021

[redacted]

Dear [redacted]

My apologies for the speed of delivery of the information. Our team have been supporting multiple issues in coordination with other disciplines to address landowner discussions as well as the main Examination process.

As discussed in the recent meeting, we anticipate that discussions will continue well beyond the D10 deadline and the Examination in order to hopefully reach agreement to enhanced mitigation.

The recent meetings gave a strong direction for the information you required as the resident of Fisher's Farm and the matters to be considered, which I trust is reflected in our proposals.

We have prepared amended plans for the route that explore the possibility of increased bunding to the east and the installation of acoustic fencing. We provide cross sections to further assist with understanding the performance of these two elements in relation to your property and the rail route at grade and on embankment.

The proposals are very much work in progress and will need to be discussed with yourselves along with the relevant authorities including Historic England.

The proposals comprise a bund up to 3m high with an acoustic fence up to 2.5m high which will screen views from your property (ground and first floor) towards trains on the rail track.

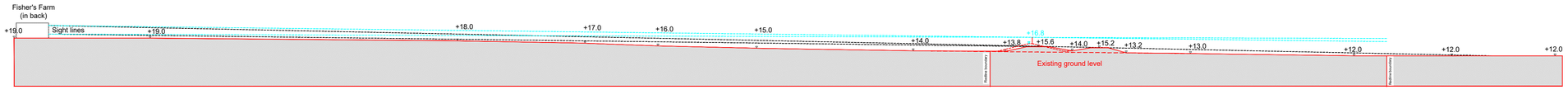
Our acoustic consultant has undertaken some initial noise modelling following the site visit. Based on a 5.5m high structure (3m high bund, plus 2.5m high fence) aligning the east side of the rail track, our consultant estimates a reduction in noise of 5.5 to 6.5dB from passing trains measured at your property.

As you are aware we are predicting noise levels that are below the level we would expect to cause an adverse effect on sleep, but in recognition of the concerns you and your neighbours have expressed, we are seeking to explore mitigation to support a reduction in noise levels.

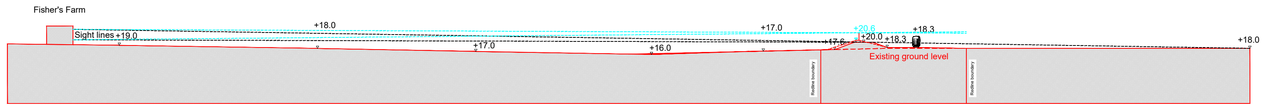
The Noise Mitigation Scheme, which is contained in Annex W of the Deed of Obligation (Doc Ref. 10.4) has been amended to provide for improvements to domestic sound insulation at lower levels of noise and to facilitate a more flexible approach to the mitigation that is available, should discussions between you and SZC Co. conclude that such measures are appropriate. This might include, as an example, alterations to your studio to improve its sound insulation performance.

We look forward to meeting you to discuss the proposals with you in more detail.

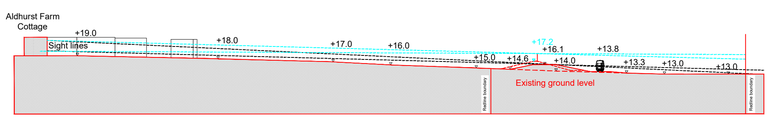
Yours sincerely,



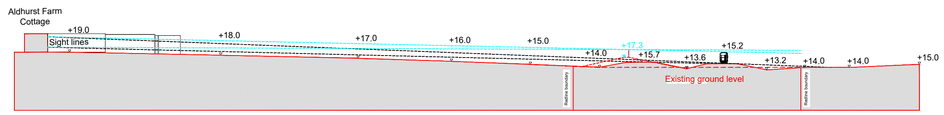
SECTION A - A'



SECTION B - B'

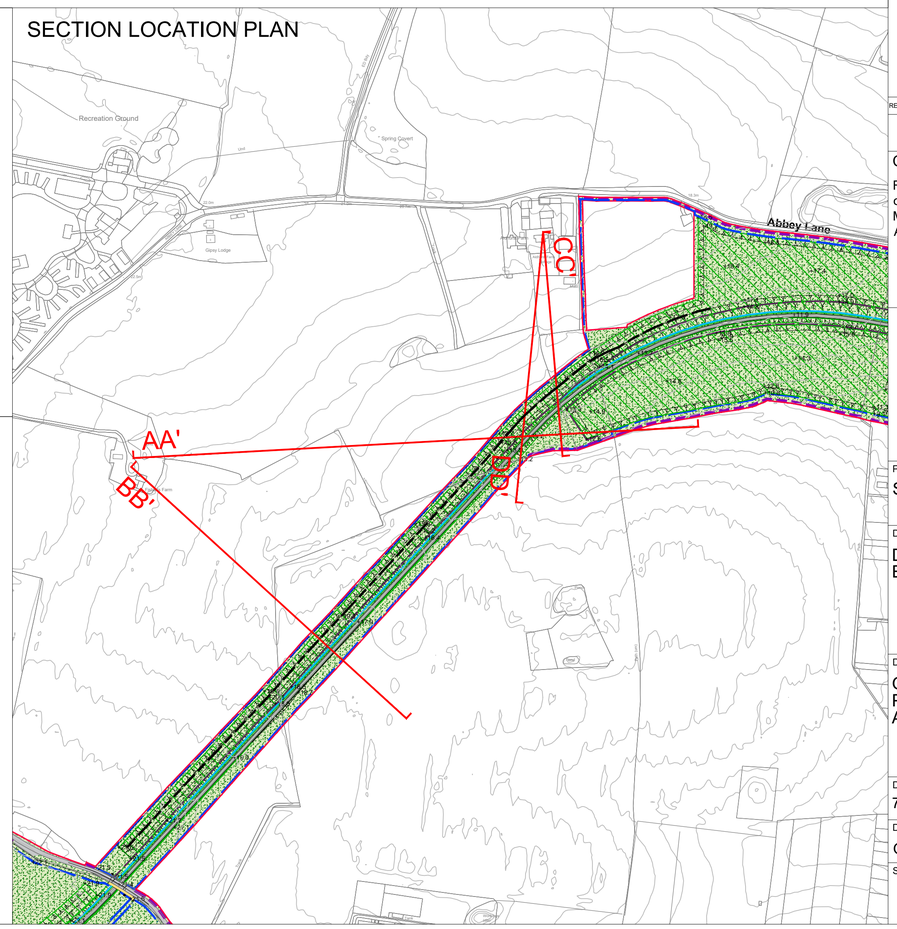


SECTION C - C'



SECTION D - D'

SECTION LOCATION PLAN



NOTES:

1. FOR DETAILS OF PERMANENT AND TEMPORARY POSSESSION WITHIN ORDER LIMITS REFER TO LAND PLANS.
2. FOR DETAILS OF THE DCO PROPOSALS, INCLUDING THE FULL DRAWING KEY, SEE THE GREEN RAIL ROUTE PROPOSED LANDSCAPE MASTERPLAN AND FINISHED LEVELS (DRAWING NO. SZC-SZ0701-XX-000-DRW-100183)
3. EXISTING PROPOSALS ARE INDICATED ON THE SECTIONS BY SOLID LINES, WITH SIGHT LINES FROM FISHER'S FARM AND ALDHURST COTTAGES INDICATED WITH BLACK DASHED LINES.
4. POTENTIAL AMENDMENTS TO THE CURRENT DCO SCHEME ARE INDICATED ON THE SECTIONS AS RED DASHED LINES FOR THE PROPOSED LANDFORM CHANGES, WITH THE POTENTIAL REVISED SIGHT LINES INDICATED BY BLUE DASHED LINES. THESE AMENDMENTS INCREASE THE HEIGHT OF THE PROPOSED BUND FROM APPROXIMATELY 2M TO APPROXIMATELY 3M, WITH A NOISE BARRIER OF APPROXIMATELY 2.5M IN HEIGHT INDICATED ON THE TOP OF THE BUND.
5. ON THE SECTION LOCATION PLAN THE PROPOSED CHANGES IN PLAN FORM ARE INDICATED WITH BLACK DASHED LINES AND THE POTENTIAL 2.5M HIGH NOISE BARRIER IS SHOWN AS A WIDER BLACK DASHED LINE.
6. ALL POTENTIAL AMENDMENTS ARE INDICATIVE AND SUBJECT TO FURTHER DISCUSSION WITH HISTORIC ENGLAND AND OTHER INTERESTED PARTIES.

REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION / COMMENTS	APPROVED

NOT PROTECTIVELY MARKED

SizewellC
Doing the power of good for Britain
EDF CGN

PROJECT:
SIZEWELL C

DOCUMENT:
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
GREEN RAIL ROUTE
PROPOSED SECTIONS AND POTENTIAL ALTERATIONS TO PROPOSALS

DRAWING NO:	REVISION:
7678_GRR_SK001	01

DATE:	DRAWN:	SCALE:
OCT 2021	K.S.	1:1000 @ A1

SCALE BAR:
50m 0 50 100 150m

APPENDIX J: COPIES OF CORRESPONDENCE WITH MR AND MRS BODEN

PROPOSED 1M HIGH BUND

PROPOSED 2M HIGH BUND

ADDITIONAL PLANTING WITHIN TEMPORARY LAND TAKE AREA TO PROVIDE ADDITIONAL SCREENING

ADDITIONAL PLANTING WITHIN TEMPORARY LAND TAKE AREA TO PROVIDE ADDITIONAL SCREENING

PROPOSED 1.5M HIGH BUND

POTENTIAL ENHANCEMENT OF EXISTING FIELD BOUNDARY BY AGREEMENT

POTENTIAL ENHANCEMENT OF EXISTING FIELD BOUNDARY BY AGREEMENT

NOTES:

1. FOR DETAILS OF PERMANENT AND TEMPORARY POSSESSION WITHIN ORDER LIMITS REFER TO LAND PLANS

DEVELOPMENT SITE BOUNDARY

SOFTWORKS - EXISTING

RETAINED HEDGEROW

RETAINED IMPORTANT HEDGEROW (HEDGEROW REGULATIONS 1997)

RETAINED AND ENHANCED TREES AND SHRUBS

RETAINED AND ENHANCED POND

SOFTWORKS - PROPOSED

HEDGEROW PLANTING

NATIVE TREE AND SHRUB PLANTING AS SHOWN ON DCO DRAWINGS

NATIVE TREE AND SHRUB PLANTING - PROPOSED ADDITIONAL ENHANCEMENTS

GRASSLAND - RETAINED OR REINSTATED

TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORKS

EXISTING POND TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORKS

INDICATIVE POND FOR GREAT CRESTED NEWT MITIGATION

INDICATIVE POND FOR BIODIVERSITY NET GAIN

HARDWORKS - PROPOSED

HIGHWAY BOUNDARY FENCE

CLOSE BOARD FENCE

ACOUSTIC FENCE

VEHICLE SURFACING

TRACK

INDICATIVE LIGHTING COLUMN

EARTHWORKS / INDICATIVE DRAINAGE - PROPOSED

CUTTING OR EMBANKMENT

INDICATIVE ATTENUATION BASIN

INDICATIVE SWALE

PROPOSED WATERCOURSE CULVERT

PROPOSED FLOOD RELIEF CULVERT

PROPOSED DITCH CULVERT

INDICATIVE WATERCOURSE DIVERSION

ACCESS ROUTES

EXISTING RIGHT OF WAY TO BE RETAINED

NEW PERMANENT RIGHT OF WAY

REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION / COMMENTS	APPROVED

NOT PROTECTIVELY MARKED

Sizewell C
Doing the power of good for Britain
EDF CGN

PROJECT:
SIZEWELL C

DOCUMENT:
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

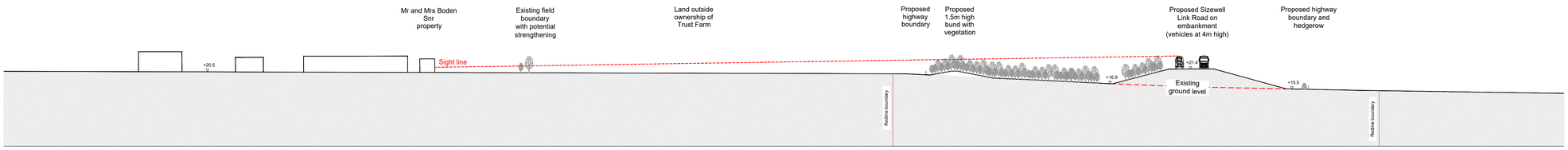
DRAWING TITLE:
SIZEWELL LINK ROAD
PROPOSED LANDSCAPE MASTERPLAN AND FINISHED LEVELS
TRUST FARM

DRAWING NO:	REVISION:
7678_TF_SK001	

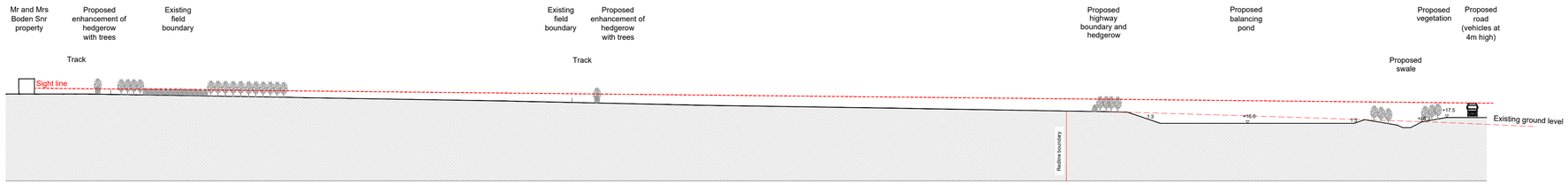
DATE:	DRAWN:	SCALE:
SEPT 2021	R.K.	1:2500 @ A1

SCALE BAR:
50m 0 50 100 150m

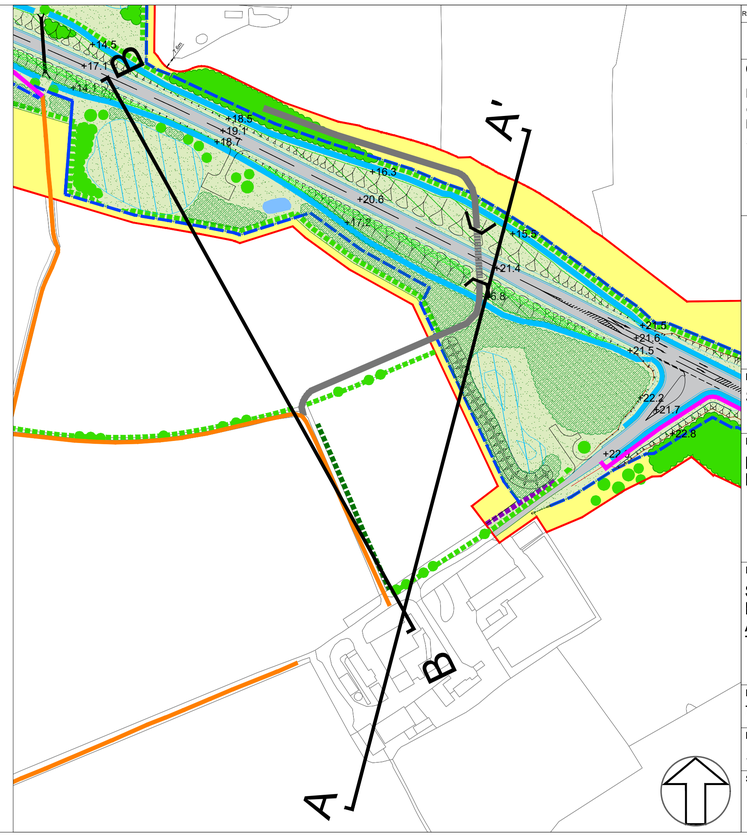
NOTES: 1. FOR DETAILS OF PERMANENT AND TEMPORARY POSSESSION WITHIN ORDER LIMITS REFER TO LAND PLANS



SECTION A - A'



SECTION B - B'



REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION / COMMENTS	APPROVED

NOT PROTECTIVELY MARKED

SizewellC
Doing the power of good for Britain
EDF CGN

PROJECT:
SIZEWELL C

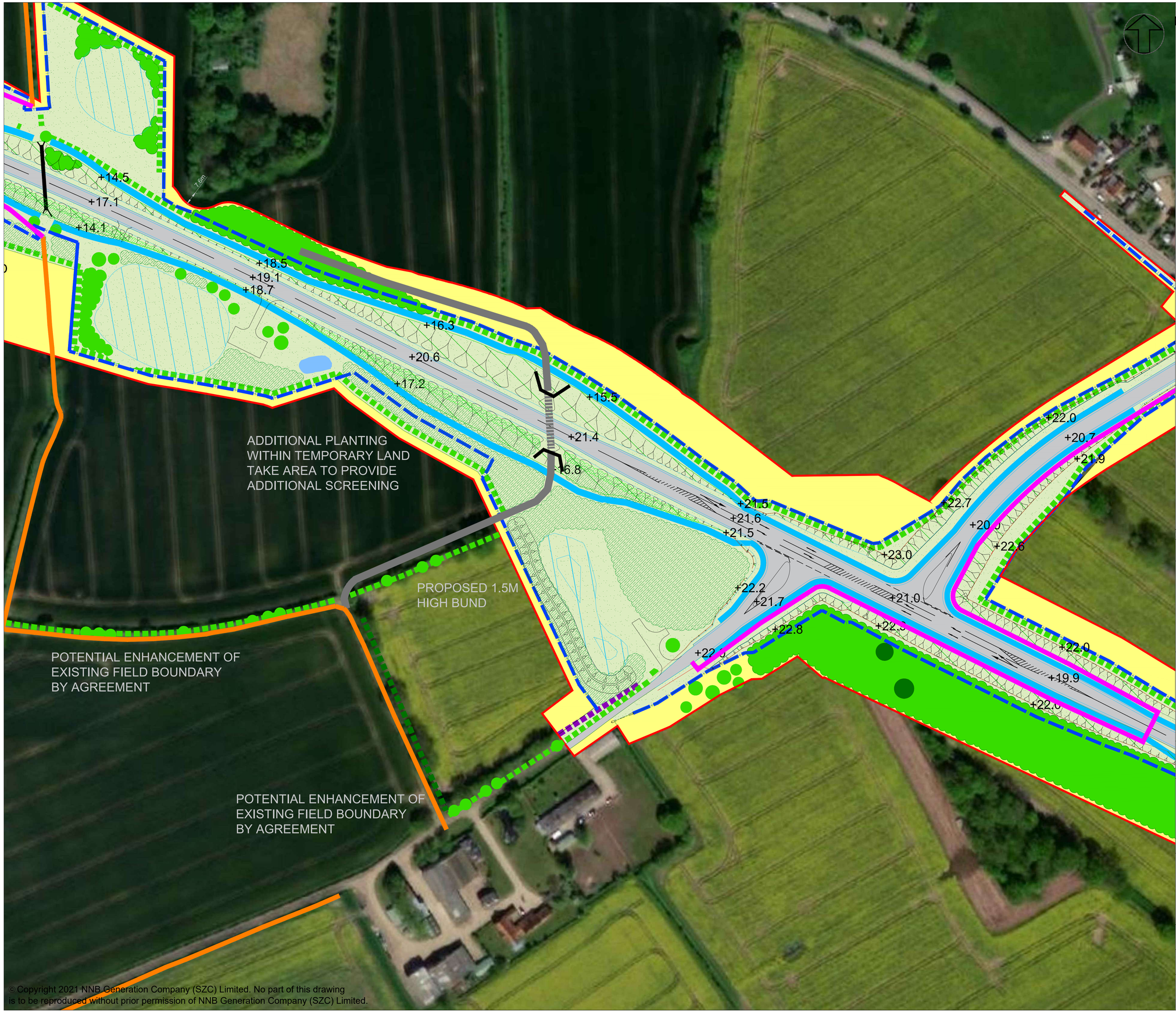
DOCUMENT:
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
PROPOSED SECTION
AND FINISHED LEVELS
TRUST FARM

DRAWING NO:	REVISION:
7678_TF_003	

DATE:	DRAWN:	SCALE:
SEPT 2021	B.B.	1:750 @ A1

SCALE BAR:
50m 0 50 100 150m



NOTES:

1. FOR DETAILS OF PERMANENT AND TEMPORARY POSSESSION WITHIN ORDER LIMITS REFER TO LAND PLANS

DEVELOPMENT SITE BOUNDARY

SOFTWORKS - EXISTING

RETAINED HEDGEROW

RETAINED IMPORTANT HEDGEROW (HEDGEROW REGULATIONS 1997)

RETAINED AND ENHANCED TREES AND SHRUBS

RETAINED AND ENHANCED POND

SOFTWORKS - PROPOSED

HEDGEROW PLANTING

NATIVE TREE AND SHRUB PLANTING AS SHOWN ON DCO DRAWINGS

NATIVE TREE AND SHRUB PLANTING - PROPOSED ADDITIONAL ENHANCEMENTS

GRASSLAND - RETAINED OR REINSTATED

TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORKS

EXISTING POND TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORKS

INDICATIVE POND FOR GREAT CRESTED NEWT MITIGATION

INDICATIVE POND FOR BIODIVERSITY NET GAIN

HARDWORKS - PROPOSED

HIGHWAY BOUNDARY FENCE

CLOSE BOARD FENCE

ACOUSTIC FENCE

VEHICLE SURFACING

TRACK

INDICATIVE LIGHTING COLUMN

EARTHWORKS / INDICATIVE DRAINAGE - PROPOSED

CUTTING OR EMBANKMENT

INDICATIVE ATTENUATION BASIN

INDICATIVE SWALE

PROPOSED WATERCOURSE CULVERT

PROPOSED FLOOD RELIEF CULVERT

PROPOSED DITCH CULVERT

INDICATIVE WATERCOURSE DIVERSION

ACCESS ROUTES

EXISTING RIGHT OF WAY TO BE RETAINED

NEW PERMANENT RIGHT OF WAY

REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION / COMMENTS	APPROVED

NOT PROTECTIVELY MARKED

SizewellC
Doing the power of good for Britain
EDF CGN

PROJECT:
SIZEWELL C

DOCUMENT:
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
PROPOSED LANDSCAPE MASTERPLAN AND FINISHED LEVELS - ZOOM IN
TRUST FARM

DRAWING NO:	REVISION:
7678_TF_SK002	

DATE:	DRAWN:	SCALE:
SEPT 2021	R.K.	1:1000 @ A1

SCALE BAR:

50m 0 50 100 150m

View flat at a comfortable arm's length

CAMERA LOCATION (OS GRID REFERENCE):	641929 E 266935 N
GROUND LEVEL (MAOD):	21.5M
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	355°
DISTANCE TO SITE:	92M

HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)
PAPER SIZE:	841MM X 297MM (HALF A1)
ENLARGEMENT FACTOR:	TBC
VISUALISATION TYPE:	TYPE 3

PHOTO DATE / TIME:	21/08/2021 12:11
CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D
LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM
HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M

THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE.
NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE.
AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.

SizewellC
Doing the power of good for Britain
EDF NNB GenCo

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
TRUST FARM ADDITIONAL VIEWPOINT 1:
EXISTING VIEW - LEFT

NOT PROTECTIVELY MARKED

DRAWING NO.
FIGURE 7678_TF_007

DATE:	DRAWN:	SCALE:
OCT 2021	R.K.	NTS

CAMERA LOCATION (OS GRID REFERENCE):	641929 E 266935 N
GROUND LEVEL (MAOD):	21.5M
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	355°
DISTANCE TO SITE:	92M

HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)
PAPER SIZE:	841MM X 297MM (HALF A1)
ENLARGEMENT FACTOR:	TBC
VISUALISATION TYPE:	TYPE 3

PHOTO DATE / TIME:	21/08/2021 12:11
CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D
LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM
HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M

THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE.
NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE.
AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.

SizewellC
Doing the power of good for Britain
EDF NGN

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
TRUST FARM ADDITIONAL VIEWPOINT 1:
EXISTING VIEW - RIGHT

NOT PROTECTIVELY MARKED

DRAWING NO.	
FIGURE 7678_TF_007	
DATE: OCT 2021	DRAWN: R.K.
	SCALE: NTS

CAMERA LOCATION (OS GRID REFERENCE):	641929 E 266935 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	21/08/2021 12:11	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.			
GROUND LEVEL (MAOD):	21.5M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D		
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	355°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM		
DISTANCE TO SITE:	92M	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M		

SizewellC
Doing the power of good for Britain
EDF NNB GenCo

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
TRUST FARM ADDITIONAL VIEWPOINT:
PHOTOWIRE - LEFT

NOT PROTECTIVELY MARKED

DRAWING NO.
FIGURE 7678_TF_008

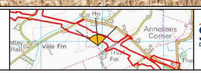
DATE:	DRAWN:	SCALE:
OCT 2021	R.K.	NTS

CAMERA LOCATION (OS GRID REFERENCE):	641929 E 266935 N
GROUND LEVEL (MAOD):	21.5M
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	355°
DISTANCE TO SITE:	92M

HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)
PAPER SIZE:	841MM X 297MM (HALF A1)
ENLARGEMENT FACTOR:	TBC
VISUALISATION TYPE:	TYPE 3

PHOTO DATE / TIME:	21/08/2021 12:11
CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D
LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM
HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M

THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE.
NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE.
AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.



SizewellC
Doing the power of good for Britain
EDF NNB GenCo

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
TRUST FARM ADDITIONAL VIEWPOINT: PHOTOWIRE - RIGHT

NOT PROTECTIVELY MARKED

DRAWING NO.
FIGURE 7678_TF_008

DATE	DRAWN	SCALE
OCT 2021	R.K.	NTS

CAMERA LOCATION (OS GRID REFERENCE):	641929 E 266935 N
GROUND LEVEL (MAOD):	21.5M
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	355°
DISTANCE TO SITE:	92M

HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)
PAPER SIZE:	841MM X 297MM (HALF A1)
ENLARGEMENT FACTOR:	TBC
VISUALISATION TYPE:	TYPE 3

PHOTO DATE / TIME:	21/08/2021 12:11
CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D
LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM
HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M

THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE.
NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, ALL DIMENSIONS ARE TO BE CHECKED ON SITE.
AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.

SizewellC
Doing the power of good for Britain
EDF NNB GenCo

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
TRUST FARM ADDITIONAL VIEWPOINT 1: PHOTOWIRE - YEAR 15 - LEFT

NOT PROTECTIVELY MARKED

DRAWING NO.
FIGURE 7678_TF_009

DATE:	DRAWN:	SCALE:
OCT 2021	R.K.	NTS

CAMERA LOCATION (OS GRID REFERENCE):	641929 E 266935 N
GROUND LEVEL (MAOD):	21.5M
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	355°
DISTANCE TO SITE:	92M

HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)
PAPER SIZE:	841MM X 297MM (HALF A1)
ENLARGEMENT FACTOR:	TBC
VISUALISATION TYPE:	TYPE 3

PHOTO DATE / TIME:	21/08/2021 12:11
CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D
LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM
HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M

THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE.
NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE.
AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.

SizewellC
Doing the power of good for Britain
EDF NGen

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
TRUST FARM ADDITIONAL VIEWPOINT 1: PHOTOWIRE - YEAR 15 - RIGHT

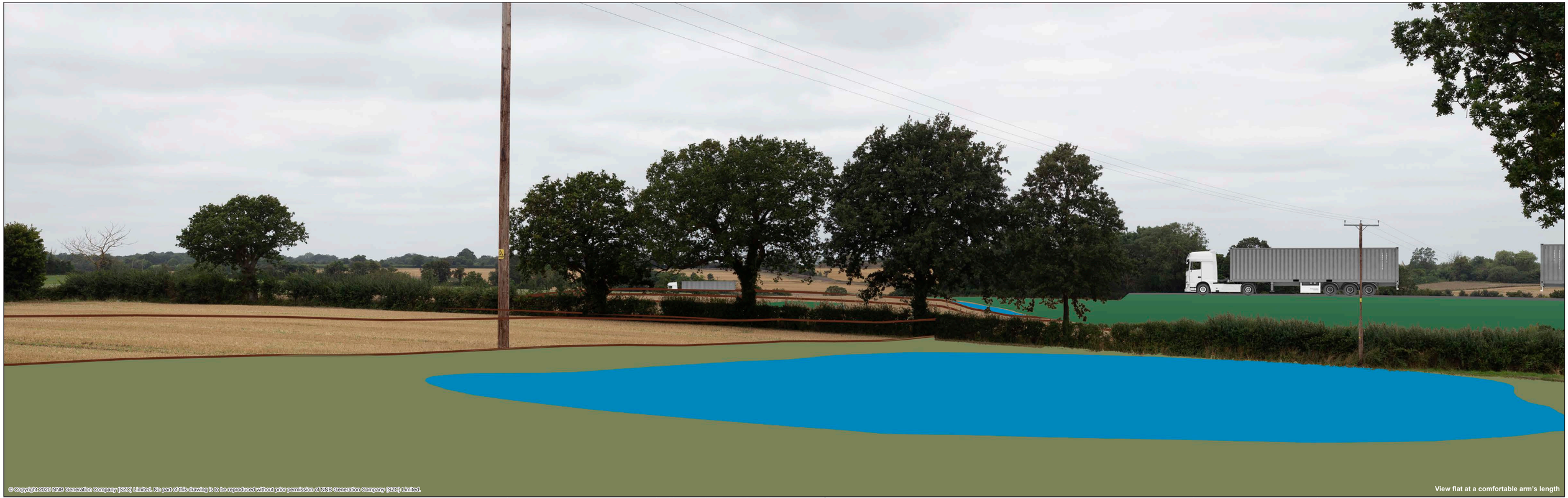
NOT PROTECTIVELY MARKED

DRAWING NO.
FIGURE 7678_TF_009

DATE:	DRAWN:	SCALE:
OCT 2021	R.K.	NTS

CAMERA LOCATION (OS GRID REFERENCE):	642097 E 266890 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	02/09/2021 12:45	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF NNB GenCo	COPYRIGHT Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.	DOCUMENT: SIZEWELL C PROJECT DRAFT ENHANCED PROPOSALS FOR DISCUSSION	DRAWING TITLE: SIZEWELL LINK ROAD TRUST FARM ADDITIONAL VIEWPOINT 2: EXISTING - LEFT	NOT PROTECTIVELY MARKED
GROUND LEVEL (MAOD):	22.0M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D				DRAWING NO: FIGURE 7678_TF_010
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	335°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM				
DISTANCE TO SITE:	WITHIN SITE	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M				DATE: OCT 2021 DRAWN: R.K. SCALE: NTS

CAMERA LOCATION (OS GRID REFERENCE):	642097 E 266890 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	02/09/2021 12:45	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF NNB GenCo	COPYRIGHT Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.	DOCUMENT: SIZEWELL C PROJECT DRAFT ENHANCED PROPOSALS FOR DISCUSSION	DRAWING TITLE: SIZEWELL LINK ROAD TRUST FARM ADDITIONAL VIEWPOINT 2: EXISTING - RIGHT	NOT PROTECTIVELY MARKED DRAWING NO: FIGURE 7678_TF_010 DATE: OCT 2021 DRAWN: R.K. SCALE: NTS
GROUND LEVEL (MAOD):	22.0M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D						
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	335°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM						
DISTANCE TO SITE:	WITHIN SITE	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M						

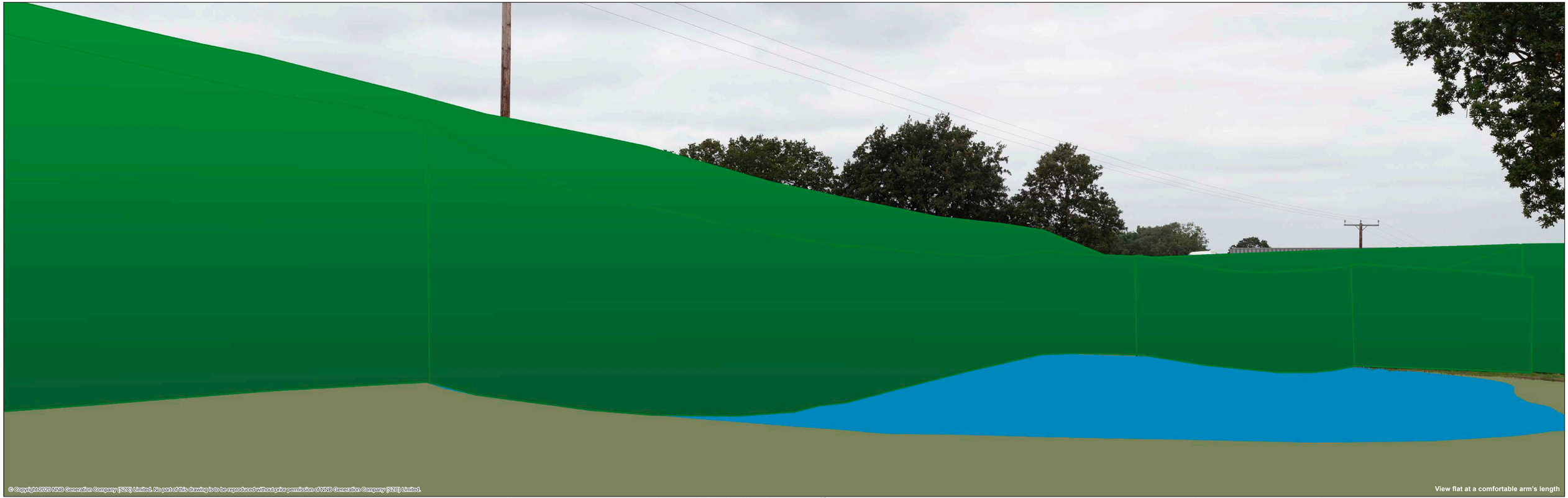


View flat at a comfortable arm's length

CAMERA LOCATION (OS GRID REFERENCE):	642097 E 266890 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	02/09/2021 12:45	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF wilcon	COPYRIGHT Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.	DOCUMENT: SIZEWELL C PROJECT DRAFT ENHANCED PROPOSALS FOR DISCUSSION	DRAWING TITLE: **SIZEWELL LINK ROAD** TRUST FARM ADDITIONAL VIEWPOINT 2: **PHOTOWIRE** - LEFT	NOT PROTECTIVELY MARKED
GROUND LEVEL (MAOD):	22.0M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D						DRAWING NO: FIGURE 7678_TF_011
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	335°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM						
DISTANCE TO SITE:	WITHIN SITE	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M						DATE: OCT 2021 / DRAWN: R.K. / SCALE: NTS

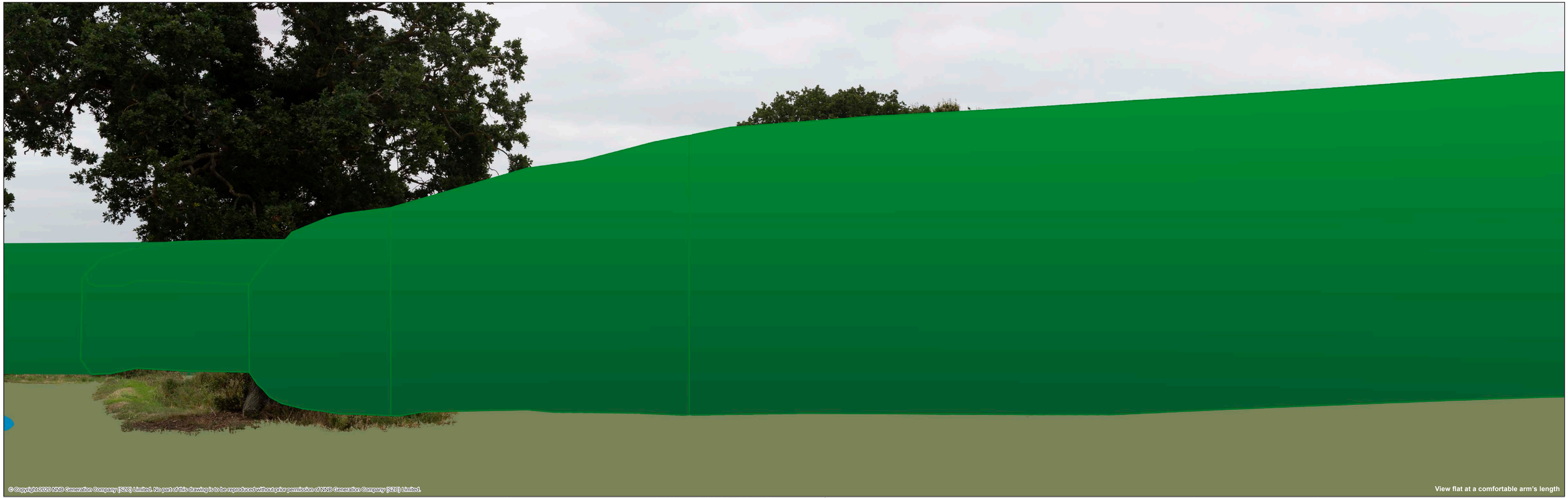
View flat at a comfortable arm's length

CAMERA LOCATION (OS GRID REFERENCE):	642097 E 266890 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	02/09/2021 12:45	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF NNB GenCo		DOCUMENT: SIZEWELL C PROJECT DRAFT ENHANCED PROPOSALS FOR DISCUSSION	DRAWING TITLE: **SIZEWELL LINK ROAD** TRUST FARM ADDITIONAL VIEWPOINT 2: **PHOTOWIRE** - RIGHT	NOT PROTECTIVELY MARKED
GROUND LEVEL (MAOD):	22.0M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D						DRAWING NO. FIGURE 7678_TF_011
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	335°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM						DATE: OCT 2021 DRAWN: R.K. SCALE: NTS
DISTANCE TO SITE:	WITHIN SITE	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M						



View flat at a comfortable arm's length

CAMERA LOCATION (OS GRID REFERENCE):	642097 E 266890 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	02/09/2021 12:45	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF NNB GenCo		DOCUMENT: SIZEWELL C PROJECT DRAFT ENHANCED PROPOSALS FOR DISCUSSION	DRAWING TITLE: SIZEWELL LINK ROAD TRUST FARM ADDITIONAL VIEWPOINT 2: **PHOTOWIRE - YEAR 15** - LEFT	NOT PROTECTIVELY MARKED
GROUND LEVEL (MAOD):	22.0M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D						DRAWING NO: FIGURE 7678_TF_012
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	335°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM						DATE: OCT 2021 DRAWN: R.K. SCALE: NTS
DISTANCE TO SITE:	WITHIN SITE	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M						



View flat at a comfortable arm's length

CAMERA LOCATION (OS GRID REFERENCE):	642097 E 266890 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	02/09/2021 12:45	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF NNB GenCo	COPYRIGHT Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.	DOCUMENT: SIZEWELL C PROJECT DRAFT ENHANCED PROPOSALS FOR DISCUSSION	DRAWING TITLE: **SIZEWELL LINK ROAD** TRUST FARM ADDITIONAL VIEWPOINT 2: **PHOTOWIRE - YEAR 15** - RIGHT	NOT PROTECTIVELY MARKED
GROUND LEVEL (MAOD):	22.0M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 6D					DRAWING NO: FIGURE 7678_TF_012	
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	335°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	EF 50MM F/1.8 STM					DATE: OCT 2021	DRAWN: R.K. SCALE: NTS
DISTANCE TO SITE:	WITHIN SITE	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M						

View flat at a comfortable arm's length

CAMERA LOCATION (OS GRID REFERENCE):	641975 E 266842 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	05/03/2019 11:25	NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF NNB GenCo	COPYRIGHT Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.
GROUND LEVEL (MAOD):	28.5M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 5D MARK III				
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	45°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	SIGMA 50MM F1.4 EX DG HSM				
DISTANCE TO SITE:	75M	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M				

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
REPRESENTATIVE VIEWPOINT 6:
EXISTING VIEW

NOT PROTECTIVELY MARKED

DRAWING NO.
FIGURE 7678_TF_004

DATE:	DRAWN:	SCALE:
OCT 2021	R.K.	NTS

View flat at a comfortable arm's length

CAMERA LOCATION (OS GRID REFERENCE):	641975 E 266842 N	HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)	PHOTO DATE / TIME:	05/03/2019 11:25	THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, ALL DIMENSIONS ARE TO BE CHECKED ON SITE. AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.		SizewellC Doing the power of good for Britain EDF NNB GenCo
GROUND LEVEL (MAOD):	28.5M	PAPER SIZE:	841MM X 297MM (HALF A1)	CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 5D MARK III		
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	45°	ENLARGEMENT FACTOR:	TBC	LENS MAKE, MODEL AND FOCAL LENGTH:	SIGMA 50MM F1.4 EX DG HSM		
DISTANCE TO SITE:	75M	VISUALISATION TYPE:	TYPE 3	HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M		

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:
SIZEWELL LINK ROAD
REPRESENTATIVE VIEWPOINT 6:
PHOTOWIRE

NOT PROTECTIVELY MARKED

DRAWING NO:
FIGURE 7678_TF_005

DATE:	DRAWN:	SCALE:
OCT 2021	R.K.	NTS

CAMERA LOCATION (OS GRID REFERENCE):	641975 E 266842 N
GROUND LEVEL (MAOD):	28.5M
DIRECTION OF VIEW: BEARING FROM NORTH (0°):	45°
DISTANCE TO SITE:	75M

HORIZONTAL FIELD OF VIEW:	53.5° (PLANAR PROJECTION)
PAPER SIZE:	841MM X 297MM (HALF A1)
ENLARGEMENT FACTOR:	TBC
VISUALISATION TYPE:	TYPE 3

PHOTO DATE / TIME:	05/03/2019 11:25
CAMERA MODEL AND SENSOR FORMAT:	CANON EOS 5D MARK III
LENS MAKE, MODEL AND FOCAL LENGTH:	SIGMA 50MM F1.4 EX DG HSM
HEIGHT OF CAMERA LENS ABOVE GROUND (MAOD):	1.5M

THIS VISUALISATION IS BASED UPON LIDAR DIGITAL SURFACE DATA WITH SPOT HEIGHTS AT 2M INTERVALS AND DOES NOT PRECISELY MODEL SMALL SCALE CHANGES IN LANDFORM OR SHARP BREAKS IN SLOPE.
NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, ALL DIMENSIONS ARE TO BE CHECKED ON SITE.
AREA MEASUREMENTS FOR INDICATIVE PURPOSES ONLY.

SizewellC
Doing the power of good for Britain
EDF NNB GenCo

DOCUMENT:
SIZEWELL C PROJECT
DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

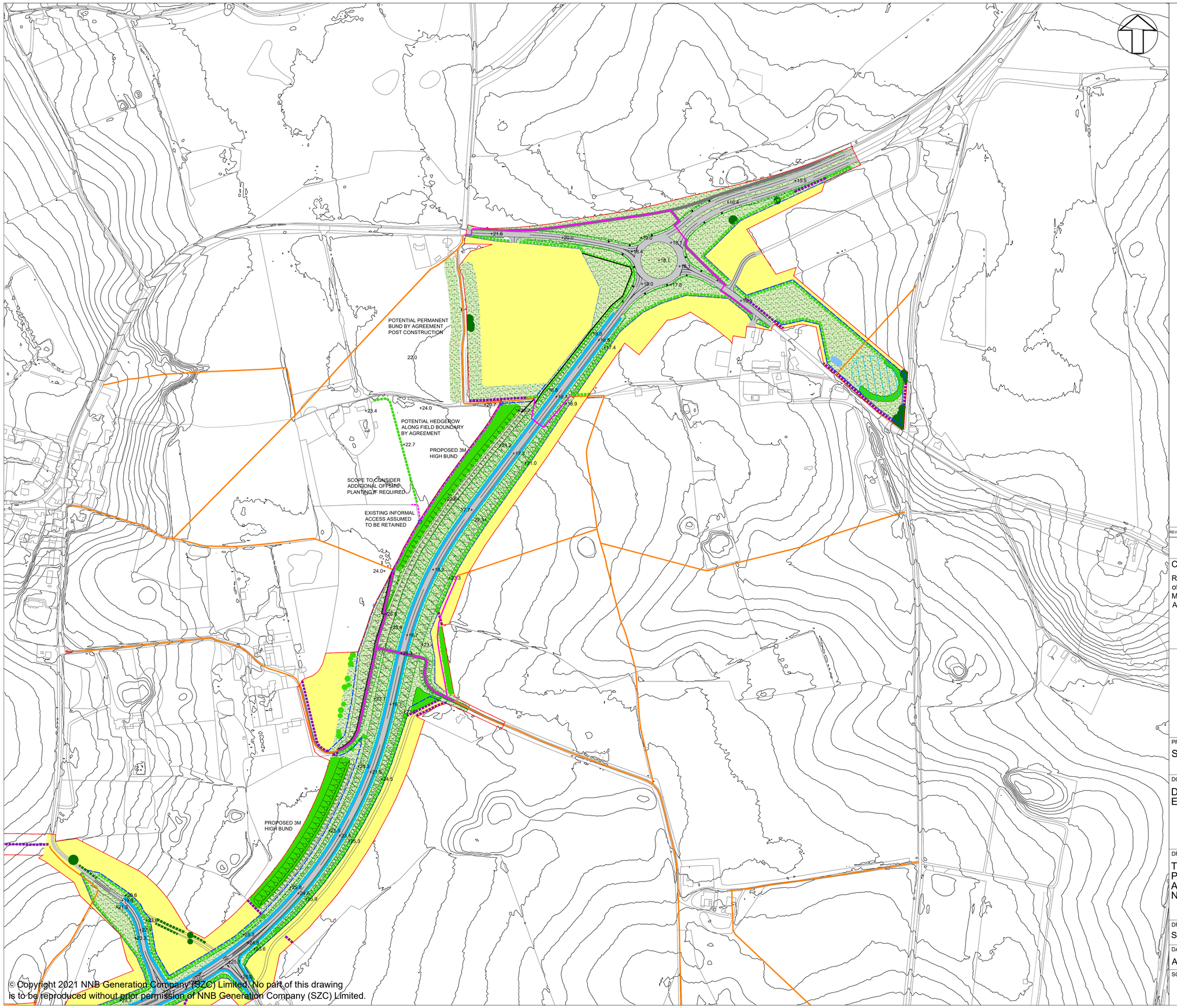
DRAWING TITLE:
SIZEWELL LINK ROAD
REPRESENTATIVE VIEWPOINT 6:
PHOTOWIRE - YEAR 15

NOT PROTECTIVELY MARKED

DRAWING NO.
FIGURE 7678_TF_006

DATE	DRAWN	SCALE
OCT 2021	R.K.	NTS

APPENDIX K: COPIES OF CORRESPONDENCE WITH FERN



NOTES:

1. FOR DETAILS OF PERMANENT AND TEMPORARY POSSESSION WITHIN ORDER LIMITS REFER TO LAND PLANS

KEY:

- DEVELOPMENT SITE BOUNDARY

SOFTWORKS - EXISTING

- RETAINED HEDGEROW
- RETAINED IMPORTANT HEDGEROW (HEDGEROW REGULATIONS 1997)
- RETAINED AND ENHANCED TREES AND SHRUBS

SOFTWORKS - PROPOSED

- HEDGEROW PLANTING
- NATIVE TREE AND SHRUB PLANTING
- GRASSLAND - RETAINED OR REINSTATED
- TO BE REINSTATED UPON COMPLETION OF CONSTRUCTION WORKS
- INDICATIVE POND FOR BIODIVERSITY NET GAIN
- INDICATIVE FLOODPLAIN GRASSLAND MITIGATION AREA

HARDWORKS - PROPOSED

- HIGHWAY BOUNDARY FENCE
- GATE
- CLOSE BOARD FENCE
- VEHICLE SURFACING
- TRACK
- CULVERT
- MAMMAL CROSSING
- INDICATIVE LIGHTING COLUMN

EARTHWORKS / INDICATIVE DRAINAGE - PROPOSED

- EXISTING CONTOURS
- CUTTING OR EMBANKMENT
- INFILTRATION BASINS
- SWALE

ACCESS ROUTES

- EXISTING RIGHT OF WAY TO BE RETAINED
- NEW PERMANENT RIGHT OF WAY
- NEW PERMISSIVE PATH

REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION / COMMENTS	APPROVED

NOT PROTECTIVELY MARKED

PROJECT:

SIZEWELL C

DOCUMENT:

DRAFT
ENHANCED PROPOSALS FOR DISCUSSION

DRAWING TITLE:

TWO VILLAGE BYPASS
PROPOSED LANDSCAPE MASTERPLAN AND FINISHED LEVELS
NOISE BARRIER OPTION

DRAWING NO:		REVISION:
SZC-SK001		01
DATE:	DRAWN:	SCALE:
AUG 2021	R.K.	1:2500 @ A1

SCALE BAR:

50m 0 50 100 150m

APPENDIX L: RESPONSE TO TOGETHER AGAINST SIZEWELL C COMMENTS ON MARINE ECOLOGY

CONTENTS

1 RESPONSE TO TOGETHER AGAINST SIZEWELL C COMMENTS AT DEADLINE 2, 7 AND 8. 2
1.1 Introduction 2
1.2 'Entrainment gap' 2
1.3 Marine fish population sustainability 9
2 REFERENCES 15

1 RESPONSE TO TOGETHER AGAINST SIZEWELL C COMMENTS AT DEADLINE 2, 7 AND 8.

1.1 Introduction

1.1.1 This note provides a response to the marine ecology comments received during Issue Specific Hearings (ISH) and written representations from Together Against Sizewell C (TASC). This includes:

- Deadline 2 **Together Against Sizewell C (TASC) Written Representation (WR) - Ecological Impacts** [REP2-481h].
- Deadline 7 **Post Hearing Submissions Including Written Submissions of Oral Case - Response to the Applicant's Follow-up Document to ISH7 re Marine Ecology (REP6-002)**[1] [REP7-247].
- Deadline 8, **TASC ISH10: Comments on Marine Ecology Documents Issued at Deadline 6** [REP8-284].

1.1.2 Responses are focused on five overarching themes, these include:

- The potential 'entrainment gap' in Section 1.2.
- Marine fish population sustainability and thresholds for effects in Section 1.3 a).
- Stock areas of relevance to Sizewell in Section 1.3 b).
- In combination and cumulative effects, including the results of the sea bass stock assessment in Section 1.3 b).
- Entrapment of conservation species (in relevant sections).

1.2 'Entrainment gap'

1.2.1 In its **Written Representation (WR) - Ecological Impacts** [REP2-481h] TASC raised concerns about the potential for an 'entrainment gap' whereby fish that are too large to be efficiently sampled by entrainment monitoring but too small to be efficiently impinged on the SZB 10mm drum screens, may be underrepresented in entrapment estimates. TASC contended that a number of species were at risk of being underestimated due to the 'entrainment gap', primarily citing juvenile sprat and gobies. Concerns have

[1] SZC CO. Written Submissions Responding to Actions Arising from ISH7: Biodiversity and Ecology – Parts 1 and 2 [REP6-002].

also been raised for other species with slender morphologies including glass eel, river lamprey and sandeel.

1.2.2 In response to the points raised regarding the possible 'entrainment gap' and the impacts on slender bodied species, SZC Co. submitted further initial information at Deadline 6 in Section 1.6 of **Written Submissions Responding to Actions Arising from ISH7: Biodiversity and Ecology – Parts 1 and 2** [REP6-002]. The submission considered the impacts in particular on slender bodied glass eel, river lamprey and sandeel. Further the Written Submission [REP6-002] committed to estimating the numbers of juvenile sprat and sand gobies in the size range potentially susceptible to the 'entertainment gap'. The implications of the entrainment gap on total entrapment predictions has been assessed for sand gobies, sprat and herring, raised in the Deadline 2 TASC Written Representation [REP2-481h] in an update to **Quantifying Uncertainty in Entrapment Predictions for Sizewell C** (Doc. Ref. 9.67 (A)) provided at Deadline 10.

1.2.3 The term 'sand gobies' has been applied within DCO documents as a shorthand to describe a taxa comprising 'gobies of the genus *Pomatoschistus* spp. of which the sand goby (*P. minutus*) is the dominant species'. TASC in their Written Representation [REP2-481h] correctly point to the fact that in the southern North Sea the genus is represented by different species. The dominant species representing the *Pomatoschistus* spp. genus in the area relevant to Sizewell are sand goby *P. minutus*. For example, in research surveys carried out near Sizewell (ICES rectangle 33F1) from 1982 -2010, *P. minutus* represented over 95% of all captured Gobiidae of the different genera including unidentified confamiliars (70,635 out of 73,854 – Cefas data). As explained in the **Environmental Statement Appendix 22A** [APP-324]), 87% of all genera of gobies impinged at Sizewell B are *Pomatoschistus* spp., consequently this species group has been treated as a key taxa and assessed accordingly. As an unexploited stock, data on population estimates for goby species in not available. Predicted entrapment losses of gobies of the genus *Pomatoschistus* spp. have been compared to a population estimate for *Pomatoschistus* spp. based on data from Cefas Young Fish Surveys (YFS). The approach is explained in BEEMS Technical Report TR406.v7 OF **ES Addendum Appendix 2.17.A Rev 1** (see Appendix E of TR339 [AS-238]. As such, entrapment losses are compared to population estimates at the same taxonomic resolution. This has been clarified in BEEMS Scientific Position Paper SPP116.v2 (Doc. Ref. 9.67 (A)).

1.2.4 At Deadline 8 **TASC ISH10: Comments on Marine Ecology Documents Issued at Deadline 6** [REP8-284] raised further related points. This section responds to TASC points, signposts where further assessments have been made to address these and provides a brief summary of the outcomes.

1.2.5 To quantify the potential 'entrainment gap', BEEMS Scientific Position Paper SPP116.v2 (Doc. Ref. 9.67 (A)) applied growth and mortality rates at age to back-calculate the expected numbers of fish within the size range that corresponds to the 'entrainment gap' between efficient entrainment and impingement sampling. Sand gobies, sprat and herring were selected as these species for further consideration since they spawn in waters adjacent to Sizewell, are the three most abundant species in entrainment monitoring sampling and contribute to the top 95% of individuals in the impingement record. Particularly in the case of small bodies gobies, they are potentially the most susceptible to the 'entrainment gap'.

1.2.6 **Quantifying Uncertainty in Entrapment Predictions for Sizewell C** (Doc. Ref. 9.67 (A)) qualifies the estimated absolute numbers of juvenile fish missing and then by means of the application of equivalent adult value (EAV) factors also estimated the number of equivalent adults this represents. This allows the proportion of missing fish from total entrapment estimates to be quantified and added to uncertainty analyses.

1.2.7 In the case of sprat, juvenile impingement in the 'entrainment gap' size range was estimated to be equivalent to additional losses of 304,982 adult fish. This represents a 6% increase in the total entrapment numbers previously predicted, taking total entrapment losses to 5,127,842 equivalent adult sprat per annum.

1.2.8 Gobies of the genus *Pomatoschistus* spp. are the key taxa most susceptible to the 'entrainment gap' due to their high abundance and the greatest proportion of their life history occurring in the size window of the entrainment gap. The number of gobies in the entrainment gap is estimated to equate to 589,200 equivalent adults per annum. This represents approximately 17.5% more equivalent adult gobies (*Pomatoschistus* spp.) than previously reported to be lost to entrapment mortality. Entrainment losses of gobies are highly precautionary in that 100% entrainment mortality is assumed. Survival rates of entrained goby larvae has been reported between 88-98% at the Calver Cliffs Nuclear Power Plant (Mayhew *et al.,* 2000). Including the entrainment gap, losses of all life stages has been estimated at approximately 156 million fish per annum (prior to calculating EAV). These additional losses have been added to the total estimates of entrapment. From this, it can be concluded that the 802 million additional sand goby losses within the 'entrainment gap' estimated by TASC in its Deadline 2 Written Representation [REP2-481h]) is a substantial overestimate.

1.2.9 Entrainment gap losses of juvenile herring were predicted to be equivalent to 15,910 adult fish. This represents a minor 1% increase in the total EAV numbers of herring entrapped per annum.

1.2.10 The application of the entrainment gap numbers resulted in increases in the relative population level effects. However, in all cases the conclusion of no significant population level effects due to entrapment from SZC remains. Further information on the context of losses at the population level and details on the methodological procedures are provided in the Deadline 10 submission **Quantifying Uncertainty in Entrapment Predictions for Sizewell C** (Doc. Ref. 9.67 (A)).

1.2.11 The following sections consider other small-bodied species for which issues have been raised by TASC in its Deadline 7 Submission - **Post Hearing submissions including written submissions of oral case - response to the Applicant's follow-up document to ISH7 re Marine Ecology (REP6-002)** [REP7-247] and Deadline 8 **TASC ISH10: Comments on Marine Ecology Documents Issued at Deadline 6** [REP8-284].

b) Smelt

1.2.12 TASC in its Deadline 8 submission [REP8-285] commented that smelt may be susceptible to the 'entrainment gap'. It is highly unlikely that there is a significant gap in the smelt assessment. This is because smelt that are small enough to be inefficiently sampled by impingement monitoring would be in the marine environment only in very low abundance. Adult smelt ascent into upper estuaries and freshwaters in February to April to spawn. Most of the juvenile fish descend to the lower estuary by early autumn of their first year (Colclough and Coates, 2013) and by that time their length is ~ 6 cm TL (Scholle *et al.,* 2007). At this stage juvenile smelt have a body depth of approximately 10mm (Froese and Pauly, 2021), the size of the drum screen mesh. In the lowest part of Thames Estuary (Canvey Island) the smelt size in autumn is generally >8 cm TL (Colclough and Coates, 2013). The size of juvenile smelt in the lower estuary is consistent with the size distribution of smelt impinged from marine habitats at Sizewell B. Length distribution data in **ES Addendum Appendix 2.17.A Rev 1** (see Appendix E of TR339 [AS-238] (pdf page 63)) demonstrate very few smelt are impinged in the size range 6-7cm TL.

1.2.13 Therefore, the underestimation of juvenile smelt due to inefficient sampling on the drum screen mesh is considered to be insignificant.

c) River Lamprey

1.2.14 In its Post Hearing submissions including written submissions of oral case, TASC comments that the majority of lamprey between 65mm and 150mm TL would pass through the 10mm mesh screen and not be impinged resulting in these fish not being quantified (see comment 12 [REP7-247]).

1.2.15 River lamprey metamorphose into adults at a length of 90-120mm and at around 130mm they migrate to the sea (Maitland, 2003). Only low numbers of lamprey below 130mm are to be expected in the marine waters off Sizewell as lampreys reproduce in freshwater, where their early stages (ammocoetes) develop. Habitat and diet influence the length of ammocoetes, with pre-adults riverine specimens being 100-120mm compared to 200-240mm for estuarine feeders (Maitland, 2003).

1.2.16 The majority of river lamprey (86%) that are impinged at Sizewell are above 130mm TL and 82% are above 200mm. It is acknowledged that there is the potential for sampling inefficiencies of fish between 130-200mm, and fish in this size class may be underrepresented, especially below 150mm as identified by TASC (comment 12 [REP7-247]). However, 64% of lamprey are above 300mm and only 18% of lamprey impinged are between 200mm and 300mm; a size range where near complete impingement would occur. Indeed, total annual impingement raised to full operational capacity in the size class 300-400mm at Sizewell B is estimated at 715 fish per annum, whilst 159 are impinged in the size class 200-300mm. This suggests the majority of adult river lamprey in the waters at Sizewell would be effectively sampled.

1.2.17 Low numbers of small river lamprey, down to size ranges of 65mm, have been sampled in monitoring at the drum screens. These fish are likely river wash outs in developmental stages and it is correct that these small fish would be inefficiently sampled in impingement monitoring. However, river lamprey were not detected in entrainment sampling and numbers are anticipated to be low. Since SZC CO states in 1.16.11 of [REP6-002][2] that these small river lampreys are likely to be river washouts, TASC claims that SZC Co. is are implying they will not be viable (in assessment terms). This is incorrect, whilst these juvenile stages would have higher mortality rates and reduced likelihood of survival, an EAV of 1 has been applied to all river lamprey in the assessment for determining population level effects. This means that all lamprey impinged are assumed to survive to contribute to future spawning. This is clearly a precautionary assessment step.

1.2.18 Inefficiencies in sampling some size classes means the full size distribution of river lamprey cannot be described. However, the majority of fish at Sizewell are expected to be impinged and the effects on river lamprey are not considered to be underestimated. Further, this is because, in assessing population level-effects, predicted losses from Sizewell C have been compared to the single River Humber catchment population. This precautionary approach is agreed between SZC Co. and the Environment Agency (**Environment Agency Deadline 2 Submission - Written**

[2] Written Submissions Responding to Actions Arising from ISH7: Biodiversity and Ecology Section 1.16 of [REP6-002]).

Representation [REP2-135]). An EAV of 1 has also been applied for all river lamprey. This is the theoretical maximum for semelparous species that spawn once then die. This means the assessment undertaken by Cefas assumes all fish impinged, including juveniles, would survive to contribute to spawning in the Humber Catchment.

1.2.19 The predicted effects are 0.06% as a mean and 0.10% as an upper 95th percentile of the single river catchment biomass (Doc. Ref. 9.67 (A)). Therefore, there is an extremely low risk of the station affecting population viability.

1.2.20 Further information about river lamprey in the context of spawning UK and southern North Sea European rivers is provided in Section 6.6.3 of ES Appendix 2.17A (see **ES Addendum Appendix 2.17.A Rev 1;** see TR406 [AS-238]).

b) European Eel

i. Glass eels

1.2.21 At point 15 in its **Post Hearing submissions including written submissions of oral case** [REP7-247], TASC provides a calculation for the daily estimate for glass eel abstraction. The calculation is designed to illustrate that the large abstraction rate has the potential to result in high losses. However, the calculation is based on an unsubstantiated starting density for which available evidence does not support.

1.2.22 Whilst glass eels are present in the Sizewell coastal waters, their density is very low. Entrainment mimic unit (EMU) studies have demonstrated high survival rates of glass eels during entrainment passage (Environmental Statement Appendix 22A [APP-324]). SZC Co. is of the view that when the totality of the evidence is considered including sampling effort, entrainment mortality studies, and evidence of eel migration and behaviour relative to the location of the SZC infrastructure, the potential for entrainment losses of glass eels leading to significant impacts on the Anglian River Basin District (RBD) eel stock is very low. Further details are provided in ES Appendix 2.17A (see **ES Addendum Appendix 2.17.A Rev 1;** TR406 Section 6.6.2 pdf pg. 137 [AS-238],) and within the worst-case glass eel assessment (see **ES Addendum Appendix 2.17.A Rev 1;** see SPP104 [AS-238]).

1.2.23 Whilst it is the position of SZC Co. that the risk of the station to glass eel remains very low, the Environment Agency raised a number of points concerning the uncertainty associated with the potential entrainment of glass eels (**Environment Agency Summary of Oral Case for ISH10: Biodiversity and Ecology** [REP7-131]). SZC Co. has agreed to contribute

funding for the installation of two fish pass schemes (at Snape Maltings on the River Alde and Blythford Bridge on the River Blyth) which is secured in the **Deed of Obligation** (Doc. Ref. 8.17(H)). The schemes proposed will benefit not just eels but other fish that migrate between the sea and rivers, including smelt. Furthermore, entrainment monitoring at SZC will be undertaken as outlined in the **Fish Impingement and Entrainment Monitoring Plan** (Doc Ref. 10.8).

ii. Yellow eels

1.2.24 Later stage yellow eels have been observed in impingement records and TASC requested further information on impinged yellow eels within Section 17 of its **Post Hearing submissions including written submissions of oral case** [REP7-247]. The minimum yellow eel size recorded at Sizewell was 22.5cm TL, which at a fineness ratio of 16 (Turnpenny, 1981) corresponds to a body height of 14mm. This exceeds the 10mm screen mesh size and therefore there is no significant 'entrainment gap' for this life stage.

e) Other species

1.2.25 Fish assessments have primarily focused on the 24 key fish taxa identified in the Environmental Statement (**Volume 2 Main Development Site Chapter 22 Marine Ecology and Fisheries**, Table 22.61, [APP-317]), which have been determined based on their socio-economic value, conservation importance or ecological importance or a combination of these criteria. Impingement results have been presented to the Marine Technical Forum focusing on these key taxa. That is not to say that impingement predictions for the other fish and invertebrate taxa have not been considered. Calculated numbers of annual impingement at SZB and SZC without mitigation for all species are presented in **ES Statement Addendum Appendix 2.17A (**see TR406 (Appendix B) [AS-238])).

ii. Pelagic gobies

1.2.26 Pelagic species of Gobiidae are represented by the transparent goby, *Aphia minuta,* which have been found in 2009-2017 impingement records and captured off the Suffolk coast (**Chapter 22 Marine Ecology and Fisheries Appendix 22D** [APP-321]). Larvae and adults are mostly found high in the water column and therefore this species has a capacity for dispersal and gene flow over a wide area (Giovannotti *et al.,* 2009). Records in recent impingement samples may be indicative of the northward geographic expansion of the population and natural increases in population density. Transparent gobies have a short, normally annual, life cycle, with some fish in the Mediterranean completing their full life-cycle in just 7-9 months,

followed by sudden total death after the reproductive period (La Mesa 1999; La Mesa *et al*., 2005). Therefore, they have relatively high productivity and low vulnerability to entrapment mortality. Thus, entrapment by SZC is not considered to pose a significant threat to the population viability.

ii. Sandeels

1.2.27 SZC Co. does not consider the assessment of entrapment effects on sandeel has been underestimated. Extensive sampling by different gear types comprehensively demonstrates while sandeels are present in the waters off Sizewell, they are occur in low biomass (**Chapter 22 Marine Ecology and Fisheries Appendix 22D** [APP-321]) and **Written Submissions Responding to Actions Arising from ISH7: Biodiversity and Ecology** Section 1.16 pg. 21 of [REP6-002]).

1.2.28 Furthermore, the diet of little terns in the region provides supporting evidence of low relative sandeel abundances. Sandeels are an important part of diet of little terns in other regions of the North Sea, but off East Anglia they represent only a small proportion (<8%) of the diet of these birds (Green, 2017).

ii. Pipefish

1.2.29 TASC in its Deadline 7 Submission [REP7-247] questioned the absence of estimates for pipefish losses. Estimates of impingement of pipefish species at Sizewell B and predicted impingement rates at Sizewell C are presented in **ES Addendum Appendix 2.17.A Marine Ecology** [AS-238].

1.3 Marine fish population sustainability

1.3.33 This section considers comments raised by TASC at Deadline 7 [REP8-284] on Revision 1.0 of **Quantifying Uncertainty in Entrapment Predictions for Sizewell C** ([REP6-028]).

a) Threshold of effects

1.3.34 TASC questioned a statement in the Executive Summary relating to levels of mortality that can be sustained by fish populations. Further context has been provided to the text in Revision 2 (**Quantifying Uncertainty in Entrapment Predictions for Sizewell C** (Doc. Ref. 9.67 (A)) which now reads:

> *"When losses of equivalent adults as a percentage of spawning population size are low, then the long-term risks to the population are low. Values of this metric around one percent and lower pose very low risks to populations when they are known to tolerate higher rates of*

mortality from other sources. For example, in the case of commercially exploited species it has been well established that most populations can sustain annual losses of 10-20% or more of population size owing to fishing in addition to natural mortality. For species exploited by fisheries therefore, 1% annual losses pose an extremely low risk of detectable effects on population size and dynamics. If values exceed more than one or two percent, a more detailed analysis and consideration of risks is warranted".

1.3.35 The text is in relation to commercial targeted species where there is a large body of evidence to support this claim. A further explanation of the threshold for effects is provided in **ES Addendum Appendix 2.17.A Marine Ecology** (see Section 5 of TR406 [AS-238]).

1.3.36 In the Deadline 7 submissions, TASC questioned the precaution in the assessment for conservation species and elasmobranchs (including sharks, rays and skates). Species of conservation interest are considered in more detail in Section b, below.

1.3.37 In the case of elasmobranchs low fecundity, slow growth and late maturation mean they are susceptible to exploitation. Two elasmobranch species, tope and thornback ray are key fish taxa at Sizewell. Predicted losses of these species are compared against landings within the relevant stock area from data derived from the ICES Working Group on Elasmobranch Fishes (WGEF). Landings provide a conservative population comparator as they represent a proportion of spawning stock biomass (SSB). Predicted annual losses of thornback ray is 0.13% of landings whereas losses of tope are <0.02% of landings (**Quantifying Uncertainty in Entrapment Predictions for Sizewell C** (Doc. Ref. 9.67 (A)). The stock size indicator for thornback ray demonstrated a strong increase in ray abundance from around 2012 onwards and the Total Allowable Catch (TAC) has not been reached (**ES Addendum Appendix 2.17.A Rev 2;** see Section 4.4 SPP103 [REP6-016]). This provides strong evidence that the station would have no effects on population sustainability of these elasmobranch species.

b) Stock size and local effects

1.3.38 At Deadline 7, TASC commented on the scale of assessment referring to potential ecosystem level impacts that could occur at local scales. It should be emphasised that neither MMO or SZC Co. have identified any risks to populations for the species or groups of species raised by TASC. To determine the effects of entrapment of fish, two assessment approaches have been undertaken by SZC Co:

1. **Population level effects:** Annual losses of equivalent adult fish due to entrapment are estimated and compared with the size of the relevant population to assess whether entrapment poses any risk to population sustainability.

2. **Local level effects:** Assessments consider the potential for the station to cause localised depletion in fish numbers at the scale of the Sizewell Bay. Local depletion assessments are independent but complement the assessment of population level effects and consider the potential for food-web effects mediated through reductions in prey availability at the most localised scale. Local effects assessments can consider both the entrainment and impingement size fractions and are independent of EAV calculations and stock sizes. Local effects assessments are completed in **ES Addendum Appendix 2.17.A Rev 2;** SPP103 [REP6-016].

1.3.39 SZC Co. provided a Technical Note outlining its position on stock sizes in Comments at Deadline 6 in **Submission from Earlier Submissions and Subsequent Written Submissions to ISH1-ISH6 - Appendix F** [REP6-024] further information was provided in **Comments on Earlier Deadlines and Subsequent Written Submissions to CAH1 and ISH8-ISH10 Appendix I** [REP8-119]. The Technical note advocates the application of ICES stock information as the most robust and comprehensive assessment of the relevant stock areas, spawning stock biomass and landings data. The approach for comparing predicted effects of the station to ICES derived SSB or landings is typically applied for commercial, data-rich species. It is noteworthy that the MMO in its Written Representation at Deadline 2 [REP2-140] state, emphasis added:

> "*In relation to the scale of assessment, the MMO notes that the Applicant continues to justify the use of the International Council for Exploration of the Sea ("ICES") stock areas as using the best available evidence.* ***The MMO concludes that the use of ICES stock areas for commercial fish species represents the current best scientific evidence available. There is currently no robust information that would support use of more local stock areas in the assessment."***

1.3.40 For non-commercial species and those not covered by ICES advice, or where more appropriate population comparators are available, these have been applied by SZC Co.

1.3.41 In the case of the conservation species, it is appropriate to point out that SZC Co. and the Environment Agency agree on the population units for the assessment of effects on river lamprey and European eel. The population comparators for twaite shad are considered in detail in **Quantifying**

Uncertainty in Entrapment Predictions for Sizewell C (Doc. Ref. 9.67 (A)). Consistent with the precautionary HRA approach for Annex II fish species proposed by Natural England, this compares twaite shad losses to single river population estimates for mainland European SACs are there are no spawning populations on the UK east coast (Doc. Ref. 9.67 (A)).

1.3.42 TASC raises comments relating to smelt and the population comparators. Issues pertaining to smelt including the application of a precautionary Anglian region SSB for determining population-level effects are detailed in **Quantifying Uncertainty in Entrapment Predictions for Sizewell C** (Doc. Ref. 9.67 (A)). Whilst no significant effects on population sustainability are predicted, SZC has committed to a number of measures to enhance smelt in local waterbodies. SZC Co has agreed to contribute funding for the installation of fish passes at Snape Maltings and Blythford Bridge (secured by Schedule 11 of the **Deed of Obligation** (Doc. Ref. 8.17(H))) and a and a Smelt Monitoring and Mitigation Plan secured by Condition 51 on the Deemed Marine Licence (Doc. Ref. 3.1(J)). These measures have the potential to improve access to spawning habitat for smelt and benefit other diadromous species in the Alde & Ore and Blyth waterbodies.

ii. Cumulative effects

1.3.43 An additional point pertaining to the stock size raised by TASC is the incorrect assumption that Sizewell C impacts have been considered in isolation. TASC consider *"in-combination mortality impact with all the other EDF and other power company cooling water intakes killing fish along the English, Northern French, Belgium and Dutch coasts*" should be assessed with Sizewell C. However, for the species with quantifiable population estimates, particularly those ICES assessed species, the effects of existing anthropogenic impacts form part of the baseline population estimate against which effects have been compared. Furthermore, the cumulative effects of Sizewell C and Hinkley Point C operating on the same sea bass population has been assessed in **Sizewell C European Sea Bass Stock Assessment** ([REP8-131]).

ii. Sea bass stock assessment

1.3.44 At Deadline 7 TASC refers to the impacts of the SZC station on sea bass populations. To provide the highest degree of confidence available in the assessment of the station on the sustainability of sea bass populations, a full stock assessment was completed by SZC Co. Sea bass was selected for the stock assessment on the basis that it is the 4th most impinged species at Sizewell B and, along with gobies (*Pomatoschistus* spp.), has the highest predicted annual rate of impingement as a proportion of its spawning population size. Sea bass is a long-lived, repeat spawning

species. As a commercially targeted species, sea bass is a data-rich species with information on the full life-history, migratory behaviour, population genetics and stock dynamics available. Well-established, internationally reviewed and accepted stock models are also available for assessing sea bass stock dynamics. The full stock assessment is presented in **Sizewell C European Sea Bass Stock Assessment** [REP8-131]) with a summary provided herein.

1.3.45 Annual impingement predictions for SZC under a range of precautionary scenarios were added as an extra source of mortality and included within the existing ICES sea bass stock assessment from 1985 to 2020 to demonstrate the long-term effects had SZC been operational throughout the assessment period. Mean and upper 95% confidence interval impingement estimates for SZC were incorporated into historic estimates of sea bass mortality to simulate a scenario with SZC operating for 35 years. The estimated sizes of the spawning populations of sea bass, with the simulated SZC impingement mortality was then compared to the core ICES assessment without SZC. Impingement predictions included an extreme worst-case scenario with the upper 95% confidence interval (U95) of annual unmitigated impingement rates assumed in every year for the 35-year assessment period. Assessments also considered the effects of the FRR system mitigation by assuming mean and U95 impingement predictions.

1.3.46 In all scenarios tested, including the extreme worst-case SZC scenario, impingement had no discernible effects on the population trends and only very minor effects on absolute SSB. That is, the size of the spawning population would still have increased and decreased at the same times and at almost identical rates whether or not SZC impingement was occurring. This is particularly evident during the periods of spawning biomass decline in the 1980's, and more recently during the 2010's. During this potentially sensitive period from 2010-2018 of low biomass (coinciding with Comprehensive Impingement Monitoring Programme) the population trends are barely discernible with or without the addition of SZC impingement mortality.

1.3.47 Commercial and recreational fisheries mortality dominate the impact on sea bass population with the addition of SZC impingement making negligible differences. This is to be expected as the vast majority of sea bass impinged at Sizewell are 0-3-year-old fish and below the minimum conservation reference size (MCRS) currently set at 42cm. Whereas fisheries mortality is more intensive and targeted at 4–15-year-old fish.

1.3.48 The application of the ICES stock assessments incorporating precautionary SZC impingement estimates for a duration of 35 years provides powerful

evidence that there is no significant impact on population trends and impingement effects would not pose a risk to the viability of the population. The stock assessments confirm the results and conclusions drawn from the EAV-based risk assessment.

ii. North Sea Herring

1.3.49 The potential for impacts of the station on the Blackwater herring stock was raised by TASC at Deadline 8 **TASC ISH10: Comments on Marine Ecology Documents Issued at Deadline 6** [REP8-284]. This has been considered in **ES Addendum Appendix 2.17.A Rev 2** (see Section 6.6.5 of **TR406 Rev** [AS-238]). The latest position on herring is presented in response to recent comments from Natural England in Section 2.3 of **BEEMS Scientific Position Paper SPP103 Rev.5** [REP6-016].

2 REFERENCES

Colclough, S. and Coates, S. 2013. A Review of the status of Smelt Osmerus eperlanus (L.) in England and Wales – 2013. Environment Agency

Froese, R. and D. Pauly. Editors. 2021. FishBase. World Wide Web electronic publication. www.fishbase.org, version (06/2021).

Giovannotti, M., La Mesa, M. and Caputo, V., 2009. Life style and genetic variation in teleosts: the case of pelagic (*Aphia minuta*) and benthic (*Gobius niger*) gobies (Perciformes: Gobiidae). Marine biology, 156(3), pp.239-252.

Green, E., 2017. Tern diet in the UK and Ireland: a review of key prey species and potential impacts of climate change. RSPB Report.

La Mesa, M., 1999. Age and growth of *Aphia minuta* (Pisces, Gobiidae) from the central Adriatic Sea. Scientia Marina, 63(2), pp.147-155.

La Mesa, M., Arneri, E., Caputo, V. and Iglesias, M., 2005. The transparent goby, *Aphia minuta* review of biology and fisheries of a paedomorphic European fish. Reviews in Fish Biology and Fisheries, 15(1), pp.89-109.

Maitland, P. S. 2003. Ecology of the River, Brook and Sea Lamprey. Peterborough: English Nature.

Mayhew, D.A., Jensen, L.D., Hanson, D.F., Muessig P.H. 2000. A comparative review of entrainment survival studies at power plants in estuarine environments. Environ. Sci.Policy 3 (1), 295 -301.

Scholle, J., Schuchardt, B., Schultze, S., Venkenstedt, J. 2007. Situation of the smelt (*Osmerus eperlanus*) in the Ems estuary with regard to the aspects of spawning grounds and recruitment. BIOCONSULT Schuchardt & Scholle GbR. 101 pp

Turnpenny, A.W.H. 1981. An Analysis of Mesh Sizes Required for Screening Fishes at Water Intakes. Estuaries. 4; 363-368.

APPENDIX M: RESPONSE TO NATURAL ENGALND ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 6

CONTENTS

1 NATURAL ENGLAND COMMENTS ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 6 1

2 RESPONSES 2

REFERENCES 8

TABLES

None Provided.

PLATES

None Provided.

FIGURES

None Provided.

APPENDICES

None Provided.

1 NATURAL ENGLAND COMMENTS ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 6

1.1.1 Natural England provided comments on the **Fen Meadow Plan Draft 1** [REP6-026] in September 2021 in the Statement of Common Ground between Natural England and SZC Working Draft. These are presented below.

Fen Meadow Plan

Early discussions with the applicant highlighted the desirability of establishing a near-natural hydrological regime in the selected restoration sites, including stream/river channels and peatland/valley floor and lower valley slopes.

This was on the basis that it would provide the most sustainable expression of fen meadow and associated vegetation including wet woodland, wetter fen and open water features. Having reviewed Fen Meadow Plan submitted at deadline 6 [REP6-026] it is not clear that this is proposed at any of the sites, most of the work involves retention of some/most of current artificial modifications to valley/site ecohydrology. An example would be the catch dyke at Halesworth – why not completely in-fill this rather than retain it and add more structures to it?

There are also clearly big issues around the artificial drainage systems at Pakenham and implications for restoration. Some clarification and further consideration of this is needed across all three sites.

Site Specific Comments

Benhall

- No controls of River Fromus or canal. What is the significance of this for levels in restoration site? Do these not set the overall level across site, regardless of ditches being blocked.

- Canal and river water high nutrient, and flood site. This is a constraint on the development of high value vegetation. Although the ‘M22 character’ may persist with some eutrophication it will be of less nature conservation value than stands supplied with meso/oligo water, with fewer species and higher risk of dominance of competitive species, therefore lower confidence in long-term outcome.

Halesworth

- There are issues with catch drain restoration. As discussed above the biggest chance of success would be to restore natural hydrological regimes. Therefore, disabling the catch drain may offer a better chance at success.

Pakenham

- There are very high NO3 concentrations in GW apart from in dipwells. This may have implications for sustainability in the longer term.
- The account here (3.24, page 77-78) describes the highly sub-optimal nature of the 'wetland' at Pakenham Meadows SSSI. If the proposed works can help to raise the water table in this site, then it would likely be beneficial. The caveat would be that if the water was highly enriched with N and/or P then there is a threat to the remaining areas of mesotrophic wetland vegetation, however, given the likely previous occurrence of alkaline fen vegetation here, in principle wetting up here is to be encouraged.
- 'Complex drainage arrangements' limit proposals for re-naturalisation here. We advise that these are re-evaluated with constraints to more ambitious programme of re-naturalisation clearly justified. The Sizewell C (SZC) proposals would lead to the permanent loss of approximately 0.5ha of 'fen meadow' habitat from the Sizewell Marshes SSSI. This permanent loss arises from the size and location of the SZC main platform to the north of the existing Sizewell B station. The platform location is constrained to the west and north by the SSSI and to the east by the coast and the appropriate coastal defence alignment such that the loss of this area of fen meadow is unavoidable.

2 RESPONSES

2.1.1 The general initial comments are reflected in the site specific comments and therefore it is these are specifically addressed below.

a) Benhall

i. NE Comment:

- No controls of River Fromus or canal. What is the significance of this for levels in restoration site? Do these not set the overall level across site, regardless of ditches being blocked.

ii. SZC Co. Response:

- River level will determine the ditch levels in all ditches on site with an open connection to the river. Low river and ditch levels may reduce groundwater levels in areas immediately marginal to them, exacerbated by the presence of the land drains, referred to in the **Draft Fen Meadow Plan** (Doc Ref. 10.6), that will be linked directly to the marginal ditches. To limit the lowering effect of river and ditch water levels on groundwater level the **Draft Fen Meadow Plan** (Doc Ref. 10.6) proposes the disruption of the land drains and creation of a level controlled drainage network. The key benefits this provides are:
  - The separation of the drainage system from the river and Canal except under flood flow conditions; and
  - The ability to exert control on water levels to maintain elevated levels in the fen meadow and wet woodland creation area when required, but also the ability to drain off river water that already periodically floods the land, once river levels fall back. As noted below by Natural England, the River Fromus and Canal both contain elevated nutrient concentrations resulting from sewage effluent discharges amongst other sources.
- Furthermore the SZC Co. works are designed such that hydrological impacts on third party land and structures are avoided. Controlling levels in the river and/or Canal would be very likely to result in backing up of flows affecting third part land, and infrastructure in the case of the adjacent Benhall sewage treatment works, which would be an unacceptable consequence.
- As a result the proposals in the **Draft Fen Meadow Plan** (Doc Ref. 10.6) for Benhall (and indeed the other two sites) are deliberately designed such that any effects will be contained within that site.

iii. NE Comment:

- Canal and river water high nutrient, and flood site. This is a constraint on the development of high value vegetation. Although the 'M22 character' may persist with some eutrophication it will be of less nature conservation value than stands supplied with meso/oligo water, with fewer species and higher risk of dominance of competitive species, therefore lower confidence in long-term outcome.

iv. SZC Co. Response

- The **Draft Fen Meadow Plan** (Doc Ref. 10.6) recognises that M22 is a community that is botanically variable and can occur in a wide range of eco-hydrological situations. Nonetheless, the key conditions required to support M22 can be summarised as base-rich conditions, but relatively low fertility with limited nutrient concentrations (e.g. phosphate, nitrate). However, 'limited nutrient concentrations' does not mean 'no nutrient concentrations'. Whilst not indicating specific acceptable or unacceptable concentrations of nutrient for M22, Wheeler, Shaw and Tanner, 2009, (Ref 1.) indicates that M22 can accommodate considerable eutrophication without significant change to basic species composition, provided active management continues. Although it does recognise that examples in low nutrient situations may be adversely affected by increased nutrient levels. However, this would not be the case at Benhall, which would not be considered a low nutrient environment.

- In respect of the character of the M22, the **Fen Meadow Strategy** (Doc Ref. 10.16) indicates '*the defining characteristic, in what can be a habitat of relatively low floral diversity, is the presence of Juncus subnodulosus (blunt-flowered rush) and this species is used as the key indicator of fen meadow establishment within this strategy*'. The target is therefore for development of a community identifiable as M22 under the National Vegetation Classification. There is no stated target for a specific species richness, or conservation value and therefore, contrary to Natural England's comment, SZC Co. believe it can be confident in the development of M22 as the long-term outcome.

b) Halesworth

i. NE Comment:

- There are issues with catch drain restoration. As discussed above the biggest chance of success would be to restore natural hydrological regimes. Therefore, disabling the catch drain may offer a better chance at success.

ii. SZC Co. Response

- It is unclear what Natural England are referring to in respect of the comment above that 'There are issues with catch drain restoration' and SZC Co. does not want to speculate on it.

- In respect the restoration of natural hydrological regimes and disabling the catch drain, the proposals go part way to doing this, by installing a structure (that could be interpreted as blocking the drain, but which also allows for control of the water levels – there is currently no control on the levels in this drain), disrupting the land drains and cessation of the dredging management of the Catch Drain which will also lead to a gradual reduction in the drainage capacity of the drain. Furthermore the proposals include for infilling the ditch that carries drainage from the industrial estate to the River Blyth. This will further reduce the drainage paths from the habitat areas. The approach adopted allows for the control of water levels via management, which would not be possible if the catch drain was infilled, such that they can be adjusted if too high, or too low. Taking this approach SZC Co. believe it can be confident in the development of M22 as the long-term outcome.

- Whilst not a reason indicated above for not proposing blocking the Catch Drain, it is worth noting that water voles present on the Catch Drain would need to be relocated if infilling the Drain was proposed.

c) Pakenham

i. NE Comment:

- There are very high NO3 concentrations in GW apart from in dipwells. This may have implications for sustainability in the longer term.

ii. SZC Co. Response:

- It is agreed that the nutrient concentrations in a number of the ground and surface water samples at Pakenham were elevated. The **Draft Fen Meadow Plan** (Doc Ref. 10.6) recognises that M22 is a community that is botanically variable and can occur in a wide range of eco-hydrological situations. Nonetheless, the key conditions required to support M22 can be summarised as base-rich conditions, but relatively low fertility with limited nutrient concentrations (e.g. phosphate, nitrate). However, 'limited nutrient concentrations' does not mean 'no nutrient concentrations'. Whilst not indicating specific acceptable or unacceptable concentrations of nutrient for M22, Wheeler, Shaw and Tanner, 2009, (Ref 1.) indicates that M22 can accommodate considerable eutrophication without significant change to basic species composition, provided active management continues. Although it does recognise that

examples in low nutrient situations may be adversely affected by increased nutrient levels. However, this would not be the case at Pakenham, which would not be considered a low nutrient environment.

- In respect of the character of the M22, the **Fen Meadow Strategy** (Doc Ref. 10.16) indicates '*the defining characteristic, in what can be a habitat of relatively low floral diversity, is the presence of Juncus subnodulosus (blunt-flowered rush) and this species is used as the key indicator of fen meadow establishment within this strategy*'. The target is therefore for development of a community identifiable as M22 under the National Vegetation Classification. There is no stated target for a specific species richness, or conservation value and therefore, contrary to Natural England's comment, SZC believe it can be confident in the development of M22 as the long-term outcome.

iii. NE Comment:

- The account here (3.24, page 77-78) describes the highly sub-optimal nature of the 'wetland' at Pakenham Meadows SSSI. If the proposed works can help to raise the water table in this site, then it would likely be beneficial. The caveat would be that if the water was highly enriched with N and/or P then there is a threat to the remaining areas of mesotrophic wetland vegetation, however, given the likely previous occurrence of alkaline fen vegetation here, in principle wetting up here is to be encouraged.

iv. SZC Co. Response:

- The SZC Co. works are designed such that hydrological impacts on third party land and structures are avoided. Whilst NE can indicate that '*if the proposed works can help to raise the water table in this site, then it would likely be beneficial*', Natural England is not the landowner and further consultation and assessment of implications would be required. Additionally, the landowners of the Pakenham site have expressed concern about the extent to which their farming practices will be affected by the proposals as they are. It is expected that any proposal by SZC to raise ditch water levels, with the effect of making the fields wetter more widely, would be resisted. Furthermore, as Natural England note, the elevated NO_3 concentrations have been recorded in both surface waters, and groundwaters at the northern end of the site, and further

assessment of potential for effects on the wetland vegetation of introduction of such water to the SSSI would be required.

v. NE Comment:

- 'Complex drainage arrangements' limit proposals for re-naturalisation here. We advise that these are re-evaluated with constraints to more ambitious programme of re-naturalisation clearly justified. The Sizewell C (SZC) proposals would lead to the permanent loss of approximately 0.5ha of 'fen meadow' habitat from the Sizewell Marshes SSSI. This permanent loss arises from the size and location of the SZC main platform to the north of the existing Sizewell B station. The platform location is constrained to the west and north by the SSSI and to the east by the coast and the appropriate coastal defence alignment such that the loss of this area of fen meadow is unavoidable.

vi. SZC Co. Response:

- Re-naturalisation of the Pakenham site has the potential to impact the use of the site by the existing owners, and also affect land and structures owned by third parties.

- As indicated above, the landowners of the Pakenham site have expressed concern about the extent to which their farming practices will be affected by the proposals as they are. It is expected that any proposal by SZC Co. to re-naturalise the area, such that water tables were raised in fields across the site more generally, would be resisted.

- Furthermore the SZC Co. works are designed such that hydrological impacts on third party land and structures are avoided. Depending on the approach adopted, there is potential to affect third parties all around the Pakenham site, including the SSSI, land to the south of this, and the Pakenham Water Mill, a historic listed building that is reliant on the water passing down the valley to continue operation of the mill.

- Therefore, whilst the proposals go part way towards re-naturalisation of the area, by disrupting field drains to reduce the drainage, for the reasons given SZC Co. expects amendments to the drainage network to be strongly resisted by landowners potentially affected by the consequences, and they were therefore not proposed.

REFERENCES

1. Wheeler B.D., Shaw S. & Tanner K. (2009). A wetland framework for impact assessment at statutory sites in England and Wales. Science report: SC030232. Environment Agency, Bristol.

APPENDIX N: RESPONSE TO NATURAL ENGLAND ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 8

CONTENTS

1 NATURAL ENGLAND COMMENTS ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 8 [REP8-298D] 1

REFERENCES..... 10

TABLES

None Provided.

PLATES

None Provided.

FIGURES

None Provided.

APPENDICES

None Provided.

1 NATURAL ENGLAND COMMENTS ON FEN MEADOW PLAN SUBMITTED AT DEADLINE 8 [REP8-298D]

1.1.1 Natural England provided comments on the **Fen Meadow Plan Draft 1** [REP6-026] at Deadline 8 [REP8-298d]. Comments take the form of general comments on the approach in paragraphs 1.4-1.7 followed by comments on the hydrology of each of the Fen Meadow sites in paragraphs 1.9-1.13.

1.1.2 The remainder of this document presents SZC Co.'s responses where NE comments require a response. Paragraphs 1.4-1.6 are noted but do not require a response from SZC Co.. Responses are therefore provided on paragraph 1.7 onwards, with points addressed indicated by roman numerals inserted in parentheses.

a) General

i. NE Paragraph 1.7

*These are the reasons that Natural England, throughout our engagement on this issue, consistently recommended the identification of a compensation scheme that sought to achieve a near-natural hydrological regime as most desirable, and b) sought the maximum multiplier for compensatory habitat creation (i.e. 9x that which would be destroyed from Sizewell Marshes SSSI as a result of the proposed development). Currently, the Applicant's plans for all three sites are some way off this achievement of a near-natural state, and we would like to see further consideration of re-naturalising all aspects of the schemes, including hydrology, water quality and water resources **[i]**. We consider the extent currently identified for compensation to be a minimum to achieve any semblance of the sustainable expression of fen meadow as part of a peatland ecosystem **[ii]**.*

ii SZC Co. Response:

1.1.3 **[i]** The approaches proposed in the **Fen Meadow Plan Draft 1** are designed to reduce the existing drainage effects in the habitat creation areas and deliver habitats that are groundwater influenced, exposed to the annual natural rise and fall of groundwater levels. SZC Co is confident that this approach will result in the establishment of fen meadow habitat of a total area of at least 4.14ha across the three sites, to deliver against Natural England's required 9x multiplier. These measures do therefore re-naturalise the hydrological regime as far as possible within each site whilst

ensuring that hydrological impacts on third party land and structures are avoided. A wider re-naturalisation of the valley at each site, such as Natural England is suggesting, might be achieved by raising levels in rivers/streams and infilling ditch networks, but would result in unacceptable off-site impacts including potentially impacts to nearby designated sites, dependant on existing hydrological regimes. Raising levels in rivers/streams would have consequences for flood risk but could also lead to reduced flow downstream, whilst infilling drains would likely increase the wetness of land both inside and outside the individual red line boundaries affecting the use of these areas by the landowners. The approaches proposed in the **Fen Meadow Plan Draft 1** are designed to ensure impacts are contained within each site. It is not possible, with the constraints of landowners and avoiding wider impacts, to consider wider re-naturalisation.

1.1.4 **[ii]** Natural England's observation about '*the extent currently identified for compensation to be a minimum to achieve any semblance of the sustainable expression of fen meadow as part of a peatland ecosystem*' is noted. SZC Co has taken account of the required multiplier and allowed for uncertainty in the development of fen meadow habitat in the extent of fen meadow creation areas defined in the **Fen Meadow Plan Draft 1** to ensure that at least 4.14ha of fen meadow habitat is created.

a) Benhall

i. NE Paragraph 1.8

*The data collected, including soil cores and surface and groundwater monitoring indicate that the interventions proposed have the potential to achieve the conditions for fen meadow habitat creation **[i]**. It is noted that the interventions do fall short of the desire to restore natural hydrological function **[ii]**. The site could be at risk to incursion by nutrient rich water from the River Fromus and the canal, presenting a risk to successful habitat creation **[iii]**. The conclusion presented by the Applicant is that the nearby groundwater abstraction (0.25Ml/d 200m from site) is unlikely to have a significant impact on groundwater levels on the site, although it should be noted that this has not been quantified **[iv]**.*

ii SZC Co. Response:

1.1.5 **[i]** Noted

1.1.6 **[ii]** The response at paragraph 1.1.4 above applies. The approaches proposed at Benhall in the **Fen Meadow Plan Draft 1** are designed to reduce the drainage effects in the habitat creation areas and deliver habitats that are groundwater influenced, exposed to the annual natural rise

and fall of groundwater levels, which SZC Co is confident will result in development of fen meadow habitat. However, at Benhall, controlling levels in the river and/or Canal would be very likely to result in backing up of flows affecting third party land, and infrastructure in the case of the adjacent Benhall sewage treatment works, which would be an unacceptable consequence, and is therefore not proposed.

1.1.7 **[iii]** The **Fen Meadow Plan Draft 1** recognises that M22 is a community that is botanically variable and can occur in a wide range of eco-hydrological situations. Nonetheless, the key conditions required to support M22 can be summarised as base-rich conditions, but relatively low fertility with limited nutrient concentrations (e.g. phosphate, nitrate). However, 'limited nutrient concentrations' does not mean 'no nutrient concentrations'. Whilst not indicating specific acceptable or unacceptable concentrations of nutrient for M22, Wheeler, Shaw and Tanner, 2009, (Ref 1.) indicates that M22 can accommodate considerable eutrophication without significant change to basic species composition, provided active management continues. Although it does recognise that examples in low nutrient situations may be adversely affected by increased nutrient levels, this would not be the case at Benhall, which would not be considered a low nutrient environment. In addition, the risk of incursion by nutrient rich water is one which occurs in many *existing* fen meadow locations, for example on the fen meadow habitats at Sizewell Marshes SSSI, and is a known risk of establishing and/ or maintaining habitats in low-lying river valley locations, many of which are subject to such incursions during flood events.

1.1.8 In respect of the character of the M22, the **Fen Meadow Strategy** (Doc Ref. 6.13 2.9D(B)) indicates '*the defining characteristic, in what can be a habitat of relatively low floral diversity, is the presence of Juncus subnodulosus (blunt-flowered rush) and this species is used as the key indicator of fen meadow establishment within this strategy*'. The target is therefore for development of a community identifiable as M22 under the National Vegetation Classification. There is no stated target for a specific species richness, or conservation value and therefore, contrary to Natural England's comment, SZC Co. believes it can be confident in the development of M22 as the long-term outcome.

1.1.9 **[iv]** The groundwater abstraction identified has a maximum annual licensed quantity of 19.7 Ml/a and a daily maximum abstraction of 0.25 Ml/d with abstraction permitted from March to November. Abstraction at the maximum licensed rate could only be maintained for a period of 78 days and actual abstraction, is understood to be at a much lower rate. Reference to the EA's groundwater modelling contours indicate no significant drawdown generated by this abstraction in additional to regional drawdown

patterns. Furthermore, although upgradient of the site, this abstraction is located to the south of the area to be developed for Fen Meadow and as such, does not capture water that would otherwise have flowed beneath the development area. Therefore an effect on the groundwater levels underlying the Benhall site is unlikely and no further quantification (beyond that illustrated in the EA's groundwater modelling contours) was considered necessary.

b) Halesworth

i. NE Paragraph 1.9:

*The data collected, including soil cores and surface and groundwater monitoring indicate that the interventions proposed have the potential to achieve the conditions for fen meadow habitat creation. It is noted that the proposals include backfilling the central ditch that crosses the site to discharge to the Walpole River; this will be completed using material won on site with placement of clay stanks. During backfill it is recommended that the material is placed to, as far as possible, replicate the adjacent soil horizons to ensure hydraulic continuity across the site **[i]**. It is not currently proposed to back fill the catch dyke or the other on-site drainage ditches (which drain to the catch dyke). A water control structure is proposed to raise water levels in the catch dyke and associated ditches. This is contrary to the desire to restore natural hydrological function at the site. It is not clear why backfilling the catch dyke is not feasible, and no assessment of this as an alternative action appears to have been undertaken **[ii]**. No work is proposed to control water levels on either the Walpole River or the eastern boundary drain, both of which may continue to act as a discharge point for groundwater **[iii]**.*

ii SZC Co. Response:

1.1.10 **[i]** Noted.

1.1.11 **[ii]** The approaches proposed at Halesworth in the **Fen Meadow Plan Draft 1** are designed to reduce the drainage effects in the habitat creation areas and deliver habitats that are groundwater influenced, exposed to the annual natural rise and fall of groundwater levels, which SZC Co is confident will result in development of fen meadow habitat. Measures proposed include installation of a structure (that could be interpreted as blocking the drain, but which also allows for control of the water levels – there is currently no control on the levels in this drain), disrupting the land drains and cessation of the dredging management of the Catch dyke which will also lead to a gradual reduction in the drainage capacity of the drain. Furthermore the proposals include for infilling the ditch that carries drainage

from the industrial estate to the River Blyth which will further reduce the drainage paths from the habitat areas. The approach adopted allows for the control of water levels via management, which would not be possible if the catch drain was infilled, such that they can be adjusted if too high, or too low. Taking this approach SZC Co. believes it can be confident in the development of M22 as the long-term outcome.

1.1.12 **[iii]** No work is proposed to the Walpole River for the same reasons given earlier in paragraph 1.1.4. The eastern boundary drain is linked to the catch drain but downstream of the proposed water control structure and therefore would not directly affect the proposed maintenance levels in the ditches upstream. Whilst this ditch does have the potential to affect groundwater levels in its immediate vicinity, works to create fen meadow are proposed to stand off from this ditch by 20-30m and therefore the potential for the drain to affect groundwater levels in the fen meadow areas is significantly reduced.

i. Paragraph 1.10:

[i] *Drainage from the industrial estate to the north currently discharges to the central ditch. As part of the proposals, this will be diverted to discharge to the Walpole River downstream of the site. Whilst this may result in a loss of water entering the site, as surface water with potentially poor quality, this is still considered to be beneficial.*

ii SZC Co. Response:

1.1.13 **[i]** This point is noted.

c) Pakenham

i. Paragraph 1.11:

The data collected, including soil cores and surface and groundwater monitoring indicate that the interventions proposed may have the potential to achieve the conditions for fen meadow habitat creation; however it is considered by Natural England that the risk of not achieving suitable conditions is higher at this site. Groundwater monitoring indicates that the water table can be comparatively deep (>1mbgl). However, it is noted that there is no ongoing monitoring being undertaken within the main areas for proposed habitat creation ***[i]****. The proposal therefore relies on an assumed relatively flat water table being closer to surface as the ground level falls to the main areas for habitat creation, as well as slightly deeper excavation compared to the other two sites* ***[ii]****. The absence of any kind of water control means that there is less reliance placed on raising water levels at*

*this site as opposed to lowering ground surface elevation **[iii]**. Again, there does not seem to be much consideration of potential for greater restoration of natural hydrological function **[iv]**.*

ii SZC Co. Response:

1.1.14 **[i]** Contrary to Natural England's comment, there is monitoring in one of the proposed fen meadow areas (namely PAK-HA-3), and in the proposed wet woodland area (PAK-HA-6) which is a continuation of the southern fen meadow creation area and therefore directly relevant. PAK-HA-2 is located west of the north-western block, west of the central drain, and is located on slightly higher ground but can be used to provide an indication of water levels in the surrounding area. The data from PAK HA-2 is consistent with the conceptual model and corresponding monitoring data from across the site.

1.1.15 **[ii]** Within the Pakenham site, with level controls exerted by the superficial deposits and the ditches, site observations and ongoing monitoring support the assumption made about the water table in the development area. Contrary to Natural England's comment, the proposed depth of excavation at Pakenham is the same as at the other two sites (30-40cm) at the northern end, and is only 5cm deeper at the southern end, which predominantly relates to ensuring the underlying marl is encountered and providing slightly deeper water initially for wet woodland.

1.1.16 **[iii]** Agreed. The approaches proposed in the **Fen Meadow Plan Draft 1** are designed to reduce the drainage effects in the habitat creation areas and deliver habitats that are groundwater influenced, exposed to the annual natural rise and fall of groundwater levels, which SZC Co is confident will result in development of fen meadow habitat. The SZC Co. works are designed such that hydrological impacts on third party land and structures are avoided. Due to the complex drainage arrangement at Pakenham, depending on the approach adopted to raising surface water levels, there is potential to affect third parties all around the Pakenham site, including the Pakenham Meadows SSSI, land to the south of this, and the Pakenham Water Mill, a historic listed building that is reliant on the water passing down the valley to continue operation of the mill. Nonetheless, the proposals do aim to raise water levels within the site by disrupting field drains to reduce the drainage although SZC Co. has to be mindful that the landowners of the Pakenham site have expressed concern about the extent to which their farming practices will be affected by the proposals as they are.

1.1.17 **[iv]** As indicated above, the approaches proposed in the **Fen Meadow Plan Draft 1** are designed to reduce the drainage effects in the habitat creation

areas and deliver habitats that are groundwater influenced, exposed to the annual natural rise and fall of groundwater levels, which SZC Co is confident will result in development of fen meadow habitat. The SZC Co. works are designed such that hydrological impacts on third party land and structures are avoided. Following from the comments in paragraph 1.1.17, whilst it is expected that any proposal by SZC Co. to re-naturalise the area more widely, such that water tables were raised in fields across the site more generally, would be resisted by the landowners, such measures are not required.

i. NE Paragraph 1.12:

*The ditch network on site is noted to be relatively complex and includes a culvert beneath the Pakenham Stream (which is perched above the surrounding areas). Water levels in the ditch network are at least partially maintained by a leak from the Pakenham Stream to the ditch network at the location of the culvert. It is proposed to maintain this leak as part of the proposals. However, nutrient levels in the stream can be elevated, and this therefore represents an input of poorer quality water which may limit the site's suitability for fen meadow creation **[i]**. This leak has not been quantified, and nor has its seasonal variability been investigated **[ii]**. There is also elevated nitrate already recorded in groundwater at some locations, further indicating potential risk to fen meadow establishment **[iii]**.*

ii SZC Co. Response:

1.1.18 **[i]** The proposals assume maintenance of current ditch water levels to support the water table in the adjacent proposed fen meadow areas. There are no proposals to raise ditch water levels due to the potential for off-site impacts. Nor therefore is there an expectation that ditch water will be available to inundate the site to support the fen meadow habitat. Therefore, whilst it is recognised that the Pakenham Stream and ditch water quality is sub-optimal for the support of high quality fen meadow, the fen meadow areas may only be exposed to it under flood conditions, at which time nutrient concentrations would be diluted.

1.1.19 **[ii]** Agreed - The presence of the leak in the Pakenham Stream bank was discovered after the identification and installation of the monitoring network. Due to the nature and location of the breach it has therefore not been possible to quantify the volume of the leak using the existing monitoring.

1.1.20 **[iii]** The **Fen Meadow Plan Draft 1** recognises that M22 is a community that is botanically variable and can occur in a wide range of eco-hydrological situations. Nonetheless, the key conditions required to support M22 can be summarised as base-rich conditions, but relatively low fertility

with limited nutrient concentrations (e.g. phosphate, nitrate). However, 'limited nutrient concentrations' does not mean 'no nutrient concentrations'. Whilst not indicating specific acceptable or unacceptable concentrations of nutrient for M22, Wheeler, Shaw and Tanner, 2009, (Ref 1.) indicates that M22 can accommodate considerable eutrophication without significant change to basic species composition, provided active management continues. Although it does recognise that examples in low nutrient situations may be adversely affected by increased nutrient levels, this would not be the case at Pakenham, which would not be considered a low nutrient environment.

1.1.21 In respect of the character of the M22, the **Fen Meadow Strategy** (Doc Ref. 6.13 2.9D(B)) indicates '*the defining characteristic, in what can be a habitat of relatively low floral diversity, is the presence of Juncus subnodulosus (blunt-flowered rush) and this species is used as the key indicator of fen meadow establishment within this strategy*'. The target is therefore for development of a community identifiable as M22 under the National Vegetation Classification. There is no stated target for a specific species richness, or conservation value and therefore, contrary to Natural England's comment, SZC believe it can be confident in the development of M22 as the long-term outcome.

i. NE Paragraph 1.13:

*There is a licenced surface water abstraction (1.44Ml/d, operating spring and summer) on site taking water from the drains. Whilst the Fen Meadow Plan includes recommendations that this abstraction should cease, this does not appear to be guaranteed. Ongoing abstraction at this location could result in drawdown of the water table in spring/summer and present a risk to the creation of fen meadow habitat **[i]**.*

ii SZC Co. Response:

1.1.22 **[i]** Paragraph 4.5.8 of the **Fen Meadow Plan Draft** [REP8-103] indicates that ongoing abstraction presents a significant risk to the successful provision of appropriate conditions for fen meadow. At this stage it is not guaranteed that the abstraction will cease. However, in the context of the risk to fen meadow habitat creation, this is restricted to the northern compartment, and particularly to the smaller fen meadow creation area located to the west of the central drain nearest to the abstraction location. Any effects on the main area, located between the central drain and the Pakenham Stream, will be buffered by the proximity of these watercourses and the increased distance from the abstraction location. Additionally the risk to the fen meadow creation areas is currently mitigated by the level

support provided by the leak from Pakenham Stream (although it is recognised that this may not continue), the proposed disruption of the land drains (which will reduce the drainage potential), and the relatively short duration of abstraction use.

REFERENCES

1. Wheeler B.D., Shaw S. & Tanner K. (2009). A wetland framework for impact assessment at statutory sites in England and Wales. Science report: SC030232. Environment Agency, Bristol.