GREENLINK INTERCONNECTOR LIMITED

Foreshore Licence Application FS007050

Greenlink response to consultation comments

Greenlink - an interconnector between GB and the Republic of Ireland

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1. Introduction

1.1 Project Background

Greenlink Interconnector Limited (GIL) is proposing to develop an electricity interconnector (Greenlink) linking the existing electricity grids in Ireland and Great Britain. The Proposed Development comprises the Irish Marine components of Greenlink from mean high-water springs (MHWS) at Baginbun Beach, County Wexford to the 12 nautical mile (NM) limit. It comprises:

- Two high voltage direct current (HVDC) electricity power cables;
- A smaller fibre-optic cable for control and communication purposes; and
- All associated works required to install, test, commission and complete the aforementioned cables; and
- All associated works required to operate, maintain, repair and decommission the aforementioned cables, including five repair events over the 40-year lifetime of Greenlink.

The Proposed Development includes the following phases:

- Installation;
- Operation (including repair and maintenance activities); and
- Decommissioning

Kilometre points (KPs) have been assigned to the route to aid with the description; running from KP124 at the 12NM limit to KP159.27 at Baginbun Beach.

1.2 Objective of this report

GIL submitted a Foreshore Licence Application (ref: FS007050) on the 01 August 2019 to the Department of Housing, Planning and Local Government - Foreshore Unit. The Foreshore Licence application was accompanied by the following documents:

- Foreshore Licence Map
- Foreshore Licence Map Campile
- Greenlink Marine Natura Impact Statement (NIS)
- Greenlink Summary of Offshore & Onshore Environmental Effects
- Greenlink Marine Environmental Impact Assessment Report (EIAR)
 - Volume 1 Non Technical Summary
 - Volume 2 EIAR
 - Volume 3 Appendices
 - Appendix A Stakeholder Meetings
 - Appendix B Competent Experts Table





- Appendix C Underwater Noise Assessment
- Appendix D Herring and Sandeel Assessment
- Appendix E Commercial Fisheries Assessment
- Appendix F Marine Archaeology
- Appendix G Cable Route Survey
- Appendix H Environmental Survey Report
- Appendix I Intertidal Habitat Survey Report
- Appendix J UXO Risk Assessment
- Appendix K Greenlink Magnetic Fields and Induced Voltages
- Appendix N Landfall Selection

The statutory consultation period on the Foreshore Licence Application commenced on 12 November 2019 and finished on 08 January 2020 (extended to 22 January 2020 for some stakeholders). On completion of the consultation period, the Foreshore Unit provided GIL with comments received from consultees. This report provides responses to the comments received on 06 February 2020 and 12 March 2020 from the following stakeholders:

- DHPLG Inspector and Engineer
- Inland Fisheries Ireland
- Marine Institute
- Department of Agriculture, Food and Marine
- Department of Culture, Heritage and the Gaeltacht Nature Conservation
- Department of Culture, Heritage and the Gaeltacht Underwater Archaeology Unit (response added to Revision 1 dated 06 April 2020)
- Marine Survey Office
- Geological Survey Ireland

2. Response to Comments

2.1 DHPLG - Inspector and Engineer

The DHPLG Report written by Edwin Mooney (Inspector & Engineer) does not request any clarifications or additional information be supplied by GIL. However, it does recommend that Consent under Section 3 of the Foreshore Act is granted subject to conditions. Having reviewed the proposed conditions, GIL would request the following changes to the proposed conditions:

DHPLG proposed condition 7

7. The Licensee shall ensure that the target burial depth for the length of the nearshore (beach shallow and intertidal zones to LWM) foreshore shall be in





accordance with those set out for HDD operations, while the target minimum depth for offshore burial shall be as set out in the application documents.

GIL proposed changes

GIL requests that the wording of this licence condition is changed to:

7. The Licensee shall ensure that the target burial depth for the length of the nearshore (beach shallow and intertidal zones to LWM) foreshore shall be in accordance with those set out for HDD operations, while the target minimum depth for offshore burial shall be as set out in the application documents.

Justification for this request is:

The burial depths set out in the EIAR (Chapter 4, Page 4-20) were not <u>minimum</u> target depths but the target burial depth. This is a nuance in phrasing but can have a significant effect on commercial contracts. GIL will stipulate a target depth to the Installation Contractor (i.e. the depths quoted in the EIAR). This is typically deeper than the minimum target depth ensuring that the Installation Contractor buries the cables to the minimum target depth and greater. If the Installation Contractor encounters difficulties in reaching the stipulated burial depth but meets the minimum target depth, GIL will be able to approve the installation and not request remedial actions. However, the licence condition as it is currently phrased will require the Installation Contractor and GIL to bury the cable to ensure the deeper depth is achieved which may be technically onerous or occur additional costs.

DHPLG proposed condition 13

13. On completion of the works the licensee shall ensure that all equipment and materials are removed and the foreshore is re-instated to its original condition to the satisfaction of the DHPLG.

GIL proposed changes

GIL requests that the wording of this licence condition is changed to:

13. On completion of installation and maintenance/repair works the licensee shall ensure that all equipment and materials are removed (except for cable protection deposits) and the foreshore is re-instated to its original condition to the satisfaction of the DHPLG.

Justification for this request is:

The wording proposed by the DHPLG is ambiguous and it is unclear to which project phases the condition relates. The proposed wording adds clarity to ensure that compliance with the condition can be monitored.





2.2 Inland Fisheries Ireland

IFI comment 1

IFI is very concerned to note that the applicant proposes to undertake additional geophysical survey work at the marine location. As previously pointed out by IFI "geophysical surveys, as indicated by the applicant, generate and propagate sound or noise into the aquatic environment. The geophysical procedures proposed use instruments that can generate sound pressure levels (SPL) of 200 dB or greater. There is potential for impacts to fish species in this foreshore licence application." IFI can fully appreciate that the applicant would wish to ensure that "no new obstructions have appeared on the seabed since the detailed engineering surveys". IFI also notes that the applicant proposes to undertake a "pre-lay grapnel (a wire with a string of specially designed hooks) will be towed along the entire route to remove any debris". This is clearly a sound plan and in this context it is difficult to understand why additional geophysical surveying would be required.

With regards to licence conditions IFI would propose:

1. Further geophysical surveying not be undertaken and that route clearance as indicated by applicant be used to ensure that there are no negative issues impeding the cable route.

GIL response

The geophysical survey proposed will be limited in extent. The engineering route survey covered the entire 500m wide application area, whilst the pre-lay survey will be focused on the cable centreline. The EIAR concluded that the effect on fish species from geophysical survey will be Slight and Not Significant.

The Installation Contractor will undertake geophysical survey (multi-beam echosounder, sidescan sonar, and magnetometer) ahead of cable lay. This is standard practice and as described in the EIAR this is to ensure "no new obstructions have appeared on the seabed since the detailed engineering survey", but it is also required for additional reasons, namely:

- 1. To identify any unexploded ordnance that requires micro-routeing around.
- 2. The Installation Contractor is required to confirm the seabed level pre- and post-installation to demonstrate that the required burial depth for the cable has been reached. The Contractor cannot rely on the previous survey data acquired in 2018 due to the intervening time period (installation is expected in 2021) and the potential for mobile bedforms to have shifted.
- 3. The new survey data is used to micro-route the cable around mobile bedforms and sensitive habitats. Given the time period between the detailed engineering survey and the cable lay (3-years) there is the potential that sensitive habitat areas could have increased or appeared, in particular EC Habitats Directive Annex 1 listed biogenic reef. It is important to characterise these areas to ensure the EAIR commitments can be implemented.





For the reasons given above, the Installation Contractor will not be able to undertake the installation without additional geophysical survey. We therefore strongly request that the IFI's proposal is not the subject of a licence condition.

IFI comment 2

As per previous correspondence in regard to the applicant in this area (FS 6582) the marine working area and the Waterford Harbour - Barrow estuary form part of the habitat for Twaite shad, a member of the herring family and a species listed in Annex II of the Habitats Directive. The Waterford Harbour and Barrow estuary areas are designated as Special Areas of Conservation for this species. The species also moves between the estuarine sheltered areas and the open sea. As such, the timing of works should take into consideration relevant life cycle elements of the Twaite shad. The species spawns in late April - early June in upper tidal areas of the River Barrow and fish will congregate in the general vicinity of Hook Head, mouth of the Waterford Harbour from early April through into early May, based on known within-estuary movements compiled by IFI.

With regards to licence conditions IFI would propose:

2. The directional drilling under the River Campile and all marine works of route clearing, rock armour placement and cable laying be undertaken outside the period April- May inclusive, in order to reduce any adverse impacts on the Twaite shad.

GIL response 2

The Greenlink EIAR considered the potential effects on Twaite shad from the Proposed Development. The main pressure likely to effect Twaite shad is the generation of underwater noise from the installation vessels, geophysical survey and if required UXO detonation.

The HDD under the Campile Estuary will occur 10m below the riverbed, with noise generated by the activity mainly on land at the entrance and exit points. The underlying geology that the HDD will drill through will absorb sound, as well as reflecting and scattering it. The underwater sound pressures levels that reach the riverbed are therefore unlikely to result in any disturbance to fish in the estuary for the duration of the construction activities.

Twaite shad is a hearing specialist fish, and therefore has the potential to be affected by a significant underwater noise change. The EIAR considered whether the proposed activities had the potential to injure or disturb individuals and cause a barrier to movement e.g. in and out of spawning rivers. The EIAR concluded that the significance of effects on Twaite shad will be Slight and Not Significant and no seasonal restrictions have been proposed.

GIL recognise that of the activities proposed, UXO detonation (if required) does have a potential to injure Twaite shad if it was undertaken in in the general vicinity of Hook Head between April and May. GIL therefore agree that as a precaution, UXO detonation between April and May (inclusive) should be controlled.





The following Project Specific Mitigation will be added to the Schedule of Mitigation presented in Chapter 17 of the EIAR.

PS19 - UXO detonation will not be undertaken between April and May (inclusive) between KP145 and KP159.27.

2.3 Marine Institute

Marine Institute comment 1

It is recommended that the following Conditions should be attached to any licence that may be granted:

- 1. The Licensee shall use that part of the Foreshore the subject matter of this licence for the purposes as outlined in the application and for no other purposes whatsoever.
- 2. The Licensee shall ensure that the mitigation measures set out in Section 17 of Volume 2 of the EIAR submitted by the applicant shall be implemented in full.
- 3. A chart and a route position list detailing the "as laid location" of the cable shall be provided to the Department of the Housing, Planning and Local Government on completion of the works.

GIL response 1

GIL have no objections to the proposed licence conditions.

2.4 Department of Agriculture, Food and Marine

DAFM comment 1

The following should be added as conditions of the licence:

- Care should be taken to avoid spillage of oils/fuel or any other chemical from operational equipment at all stages and that if there are any spills that BIM are notified immediately
- The Licensee shall use that part of the Foreshore the subject matter of this licence for the purposes as outlined in the application and for no other purposes whatsoever.
- The Licensee shall ensure that the mitigation measures set out in Section 17 of Volume 2 of the EIAR submitted by the applicant shall be implemented in full.

GIL response 1

GIL have no objections to the proposed licence conditions.



2.5 Department of Culture, Heritage and the Gaeltacht

Natura Conservation comment 1

All the mitigation outlined in the documents submitted should be included as conditions to any granted permission.

GIL response 1

GIL are committed to the full implementation of the mitigation measures outlined in Chapter 17 of the EIAR. There is no objection to this comment.

Underwater archaeology comment 1

There are two areas that require comment and further archaeological mitigation within Ireland's jurisdiction, these are:

1. Foreshore (non-subtidal zone) at Baginbun, Wexford

All works for the proposed cable shall be subject to archaeological monitoring as per the following:

- The services of a suitably qualified underwater archaeologist shall be engaged to carry out the archaeological monitoring.
- The monitoring shall be licensed and a detailed method statement shall accompany the applications to the National Monuments Service for Excavation Licence and Detection Device Licence.
- The full works, where foreshore is being impacted (including any access and egress routes by machinery) shall be subject to archaeological monitoring.
- If identifiable or potential cultural heritage is encountered during the course of works, the monitoring archaeological shall have the power to have works suspended in that area pending resolution of the cultural heritage. The applicant and works contractor shall be prepared to be advised by the National Monuments Service in this regard.
- There shall be sufficient archaeological personnel in place to ensure all machinery working on the foreshore is fully archaeologically monitored.
- The archaeological team shall be suitably qualified and suitably experienced to undertake the archaeological work.
- Should the need to suspend works arise, then the Underwater Archaeology Unit should be contacted immediately by the consultant archaeologist to ensure any suspension is judiciously dealt with.
- Provision shall be put in place for temporary storage facilities on site to retain any identified archaeological material (e.g. waterlogged wood).
- A find's retrieval strategy shall be included in the method statement as submitted, for any cultural material encountered and shall include provision for post-excavation analysis and processing, should the need arise.
- A detailed archaeological monitoring report shall submitted to National Monuments Service on completion of the work.





2. Offshore cable route.

Further information is required on the anomalies identified and associated proposed Agreed Exclusion Zones (AEZ). It is noted that the anomalies are rated as having medium to low archaeological potential. There is therefore the potential, particularly for the medium rated anomalies, that archaeology could be impacted by the proposed jetting works for the cable laying. Having considered this, the following is the recommendation of the UAU in this regard:

- More detail analysis/discussion on the anomalies is required to inform on their identified characteristics. It is not possible to agree an AEZ until such information is supplied and considered. In general the UAU, where anomalies of archaeological potential have been identified, an exclusion zone of 50m is imposed. We recognize the fact that this may not be possible in this case, with some of the identified anomalies, and we therefore need further information in order to inform a judgment on the AEZ.
- More detail on the location of anomalies (both low and medium rated) relative to the proposed cable route is required, as some of the images for the mediumdefined anomalies do not have any indication of where the cable is to be located and it is therefore not possible to spatially understand the proposed AEZ.
- Detailed charts of the selected route, broken down into defined areas along the course of the route, shall be submitted which has great detail on the anomalies relative to the specific location of the proposed cable.
- As an example, anomalies CA-2015 and CA-2018 in the nearshore area off Baginbun appear to be linear features that have surface expression. There is the potential that these could represent a wreck zone or specific wreck sites. Greater interpretation and geo-referencing relative to the cable route is required to inform an agreed exclusion zone/further archaeological mitigation.
- Anomalies that cannot be excluded or attributed an agreed AEZ, or are on the line, should be subject to underwater archaeological dive inspection to assess their nature and extent, including determining if there is any surface expression.
- The updated report containing more detailed interpretation and locating of anomalies along the route of the cable in the territorial waters of Ireland should be submitted to the National Monuments Service as Further Information.

GIL response 2

Point 1

With respect to point 1, GIL have committed to avoiding all surface works in the non-subtidal zone in Chapter 17, Table 17-2, Project Specific Mitigation PS3. There will be no machinery on the beach at Baginbun Beach, Wexford. The cables will be installed in ducts using horizontal directional drilling from an agricultural field behind Baginbun Beach (landward of mean high-water springs; and outside of the Foreshore Licence application) to below the low water mark. The HDD will be at least 700m long but could be further. GIL therefore does not





believe that the archaeological monitoring proposed for the Foreshore is appropriate.

Point 2

To address Point 2, GIL/Intertek requested Michael Walsh to provide an Addendum to the Greenlink Marine Archaeology Technical Report. Michael previously worked for Cotswold Archaeology and was the lead marine consultant and lead author of the original Technical Report. Since submission of the Foreshore Licence application, Michael has established his own marine archaeology consultancy, Coracle Archaeology. The Addendum has therefore been provided by Coracle Archaeology.

The Addendum, **Appendix A** of this document, provides further information on the 148 geophysical anomalies with archaeological potential identified during the assessment of the marine geophysical survey data collected in October 2018 by MMT.

Figures have been provided which show the cable route corridor (CSC) and the preliminary cable route in relation to the proposed Archaeological Exclusion Zones (AEZs), for each 1km stretch of the CSC within Irish waters. The cable route centreline has yet to be finalised and will be revised to accommodate environmental constraints, including these AEZs.

Of the 148 anomalies identified, none were identified as wreck sites, or as having high archaeological potential. Sixty-two anomalies were deemed to have medium archaeological potential, typically consisting of magnetic anomalies exceeding 25 nano-Tesla (nT) sometimes associated with bathymetric or sidescan sonar (SSS) anomalies. The data implies the presence of discrete metallic objects on, or just beneath the seabed. Where these anomalies correspond with physical surface (bathymetric and / or SSS) anomalies, these additional data further support the inference that these are discrete features on the seabed. The remaining 86 anomalies were identified as having low archaeological potential, and again where visible in bathymetric or SSS data, appear to be discrete anomalies.

AEZs have been defined for each individual anomaly based on the anomaly's particular characteristics.

It is Coracle Archaeology's considered opinion that these AEZs are sufficient to mitigate any level of impact from the Proposed Development on these anomalies.

GIL therefore does not believe that underwater archaeological dive inspection to assess their nature and extent will be necessary.

2.6 Marine Survey Office

Marine Survey Office comment 1

The developer must abide by all mitigating measures as outlined in the application.

GIL response 1





GIL are committed to the full implementation of the mitigation measures outlined in Chapter 17 of the EIAR. There is no objection to this comment.

2.7 Geological Survey Ireland

GSI comment 1

We would therefore like to draw your attention to Baginbun Head CGS (GR 280220 103050), under IGH theme 4: Cambrian-Silurian, identified in the 2018 County Audit of Co. Wexford (Site Report for County Audit attached and full report details can be found here). This CGS is situated in close proximity to Baginbun Beach, the proposed landfall site in Ireland. We would like to offer help with interpretive signage around Baginbun Beach or indeed Baginbun Head to explain any interesting geological features, if appropriate.

GIL response 1

There will be no intrusive works on Baginbun Beach as a consequence of the Proposed Development. The cables will be installed under the beach using HDD, with no visible signs of the infrastructure post-construction. GIL are not proposing to put up interpretative signage at Baginbun Beach.

GSI comment 2

Geological Survey Ireland's Marine and Coastal Unit manages programmes, projects and partnerships aimed at increasing our knowledge of the marine and coastal realm, developing new methods and tools for understanding coastal processes and taking action on climate change. Geological Survey Ireland's Marine and Coastal Unit in partnership with the Marine Institute, jointly manages INFOMAR, Ireland's national programme focused on seabed mapping; providing key baseline data for Ireland's marine sector. The Marine and Coastal Unit also manage coastal monitoring programmes providing data on coastal erosion and sea level rise including the Climate, Heritage and Environments of Reefs, Islands and Headlands (CHERISH) and the Coastal Vulnerability Index (CVI) mapping projects. We would therefore recommend use of our Marine and Coastal Unit datasets available on our website and Map Viewer.

GIL response 2

INFOMAR was a key data source used in the development of the Greenlink cable route. The recommendation for additional data sources has been noted for any future projects.





Appendix A

Addendum to Cotswold Archaeology report no 770349_01 Archaeological review of foreshore, near shore and offshore survey data





Anna Farley Intertek Energy & Water Consultancy Services Exchange House Station Rd Liphook Hampshire GU30 7DW

3 April 2020

Dear Anna

Greenlink Interconnector Project: Addendum to Cotswold Archaeology report no. 770349_01 Archaeological review of foreshore, near shore and offshore survey data

I write with reference to your recent enquiry regarding the Underwater Archaeology Unit's response to Cotswold Archaeology's report number 770349_01 on the archaeological review of marine geophysics. As Cotswold Archaeology's lead marine consultant at the time, and lead author of report number 770349_01 I have pleasure in providing the following addendum to that report.

This addendum provides further information on the 148 geophysical anomalies with archaeological potential (Table 1) identified during the assessment of the marine geophysical survey data collected in October 2018 by MMT (see Cotswold Archaeology 2019).

Figures A1-A84 show the cable route corridor (CSC) and the preliminary cable route in relation to the proposed Archaeological Exclusion Zones (AEZs), for each 1km stretch of the CSC within Irish waters. The cable route has yet to be finalised and will be revised to accommodate environmental constraints, including these AEZs.

Of the 148 anomalies identified, none were identified as wreck sites, or as having high archaeological potential. Sixty-two anomalies were deemed to have medium archaeological potential, typically consisting of magnetic anomalies exceeding 25 nano-Tesla (nT) sometimes associated with bathymetric or sidescan sonar (SSS) anomalies. The data implies the presence of discrete metallic objects on, or just beneath the seabed. Where these anomalies correspond with physical surface (bathymetric and / or SSS) anomalies, these additional data further support the inference that these are discrete features on the seabed. The remaining 86 anomalies were identified as having low archaeological potential, and again where visible in bathymetric or SSS data, appear to be discrete anomalies.



AEZs have been defined for each individual anomaly based on the anomaly's particular characteristics. Smaller AEZs are defined where features are clearly visible within corresponding datasets, for example magnetic anomalies associated with anomalies visible in the SSS or seismic data, and there is no evidence of scour or lateral spread associated with that anomaly. In these instances, a 10m radius AEZ was deemed an acceptable level of protection. Where overlapping Infomar survey data is available, between KP124-159 (see Figures A1-A34), this was also utilised to support the designation of AEZs by comparing changes in seabed level and bedform patterns in the same area between these different surveys.

For groups of anomalies, such as CA_2011, a larger AEZ radius (25m in this instance) was adopted to encapsulate all visible SSS and bathymetric anomalies and associated magnetic anomalies. This was deemed sufficient as the seabed beyond the proposed (25m) AEZ shows no disruption in the bedform pattern (between multiple datasets) to suggest the presence of further anomalies beyond the AEZ margins that might have archaeological potential.

Ten of the proposed AEZs in Irish waters are located within 50m of the proposed cable route. These are listed in Table 1 in order of proximity (below). The distances given in column six are from the edge of the proposed AEZ to the proposed cable route. As discussed with your colleagues, the current proposed cable route encroaches the proposed 15m AEZ for anomaly **CA_2008** (see Figure A2). This comprises a discrete SSS anomaly, measuring 1.5 x 1m, and bathymetric depression, measuring 2.7 x 2.1 x 0.1m, directly associated with magnetic anomaly M_SB_B1_0015 (30nT). These anomalies represent a discrete feature located within an area of seabed devoid of bedforms. As agreed with your colleagues, this section of the cable route will be moved further south, within the CSC, to respect the boundary of this proposed AEZ. More details of the other nine anomalies are provided below.

CA_2038

The proposed cable route passes 5m beyond the proposed 10m AEZ. This consists of a SSS anomaly $S_FR_B3_5159$, measuring 4.7 x 1.7m, associated with a slight bathymetric depression, measuring 4 x 4 x 0.14m. There are no corresponding magnetic anomalies. The bathymetric depression is situated within an area of bedforms with a wavelength of c. 6m, waveheight of c. 0.15m and orientated in a NW-SE direction. Beyond the small bathymetric depression there are no other features on the seabed affecting the bedform morphology suggesting this is a discrete localised feature.



Anomaly ID	Easting WGS84 UTM 30N	Northing WGS84 UTM 30N	Description	Archaeo logical potential	Proposed AEZ radius (m)	Proximity of AEZ boundary to cable route
CA_2008	239240	5788036	Mag Anomaly M_SB_B1_0015 (30nT) and associated SSS anomaly (1.5 x 1m)	Medium	15	Currently encroaches by 3m*
CA_2038	261303	5738535	SSS Anomaly S_FR_B3_5159 (4.7x1.7m)	Low	10	5m beyond
CA_2028	253990	5749814	Mag Anomaly M_FR_B2_0039 (32nT)	Low	10	10m beyond
CA_2025	249454	5756980	Mag Anomaly M_FR_B2_0032 (23nT) and slight bathymetric depression 8x6m	Medium	15	10m beyond
CA_2010	240879	5784038	Mag Anomaly M_FR_B2_0025 (27nT)	Medium	10	11m beyond
CA_2007	238858	5787799	Mag Anomaly M_SB_B1_0014 (24nT) and SSS S_SB_B1_0082	Medium	10	18m beyond
CA_2024	248002	5760789	SSS Anomaly S_FR_B2_5202 (1.3x1.7x0.5m)	Medium	20	22m beyond
CA_2026	252508	5753304	Mag Anomaly M_FR_B2_0034 (20nT) and SSS Anomalies S_FR_B2_5190 (1.4x1m) and S_FR_B2_5191 (1.4x1.4x0.5m)	Medium	25	23m beyond
CA_2042	272473	5732814	SSS Anomaly S_FR_B3_5154 (2.8x1.7x1m) and associated bathymetric depression (6x3m)	Medium	20	24m beyond
CA_2009	239466	5788057	Mag Anomaly M_SB_B1_0017 (686nT) and SSS S_SB_B1_0141	Medium	20	27m beyond

Table 1 The ten closest anomalies to the current proposed cable route in Irish waters

CA_2028

The proposed cable route passes 10m beyond the boundary of the proposed 10m radius AEZ. This consists of a single magnetic anomaly M_FR_B2_0039 (32nT). There are no anomalies present in the SSS or bathymetric data. The local bathymetry shows a series of parallel sinuous bedforms with a wavelength of c. 8m and a waveheight of c. 0.2m, orientated in a NW-SE direction. There are no anomalies on the seabed affecting the bedform morphology within the wider area suggesting this is a discrete localised feature.

CA_2025

The proposed cable route passes 10m beyond the boundary of the proposed 15m radius AEZ. This consists of a magnetic anomaly M_FR_B2_0032 (23nT) associated with a slight bathymetric depression, 8.0 x 6.0 x 0.1m. The bathymetric depression is situated within an area of bedforms with a wavelength of c. 12m, waveheight of c. 0.10m and orientated in a NNW-SSE direction. Beyond the small bathymetric depression there are no other features on the seabed affecting the bedform morphology suggesting this is a discrete localised feature.



CA_2010

The proposed cable route passes 11m beyond the boundary of the proposed 10m radius AEZ. This consists of a single magnetic anomaly M_FR_B2_0025 (27nT) with no corresponding features in the SSS or bathymetry data, the latter showing bedforms with a wavelength of c. 2m, waveheight of c. 0.16m and orientated in a WNW-ESE direction. Beyond the small bathymetric depression there are no other features on the seabed affecting the bedform morphology suggesting this is a discrete localised feature.

CA_2007

The proposed cable route lies 18m beyond the boundary of the proposed 10m radius AEZ. This consists of a discrete SSS anomaly S_SB_B1_0082, measuring 1.4 x 1.2m, directly associated with magnetic anomaly M_SB_B1_0014 (24nT). There is no corresponding bathymetric feature associated with this location. These anomalies represent a discrete feature located in an area of seabed devoid of bedforms.

CA_2024

The proposed cable route passes 22m beyond the boundary of the proposed 20m radius AEZ. This consists of a SSS anomaly S_FR_B2_5202, measuring $1.3 \times 1.7 \times 0.5$ m, and a bathymetric depression, measuring 10 x 10 x 0.2m. There are no corresponding magnetic anomalies. The bathymetric depression is located in an area of bedforms with a wavelength of c. 15m, waveheight of c. 0.20m and orientated in a NNW-SSE direction. Beyond the small bathymetric depression there are no other features on the seabed affecting the bedform morphology suggesting this is a discrete localised feature.

CA_2026

The proposed cable route passes 23m beyond the boundary of the proposed 25m radius AEZ. This consists of a cluster of anomalies including a magnetic anomaly, M_FR_B2_0034 (20nT), SSS anomalies S_FR_B2_5190, measuring 1.4 x 1m, and S_FR_B2_5191, measuring 1.4 x 1.4 x 0.5m, the latter associated with a bathymetric depression measuring 10 x 8 x 0.25m. These may represent a cluster of features associated with debris, covering an area of 30 x 25m. The bathymetric depression is situated in an area of sinuous bedforms with a wavelength of c. 15m, waveheight of c. 0.15m and orientated in a NNW-SSE direction. Beyond these features, there are no other features on the seabed affecting the bedform morphology suggesting this is a discrete localised feature.



CA_2042

The proposed cable route passes 24m beyond the boundary of the proposed 20m radius AEZ. This consists of a SSS anomaly S_FR_B3_5154, measuring $2.8 \times 1.7 \times 1m$, and an associated bathymetric depression, measuring $6 \times 3 \times 0.25m$. The bathymetric depression is situated in an area of bedforms with a wavelength of c. 6m, a waveheight of c. 0.18m and orientated in a NW-SE direction. Beyond the small bathymetric depression there are no other features on the seabed affecting the bedform morphology suggesting this is a discrete localised feature.

CA_2009

The proposed cable route passes 27m beyond the boundary of the proposed 20m radius AEZ. This consists of a discrete SSS anomaly S_SB_B1_0141, measuring 1.8 x 1.6 x 0.5m, and a bathymetric depression, measuring 12 x 3 x 0.1m, directly associated with magnetic anomaly M_SB_B1_0017 (686nT). These anomalies represent a tightly constrained feature located within an area of low-amplitude bedforms.

Anomalies **CA_2046** and **CA_2082** are associated with probable cable routes; AEZs placed on their central position within the CSC can be wavered, as alternative approaches to crossing these routes will be considered in the final cable installation methodology.

References

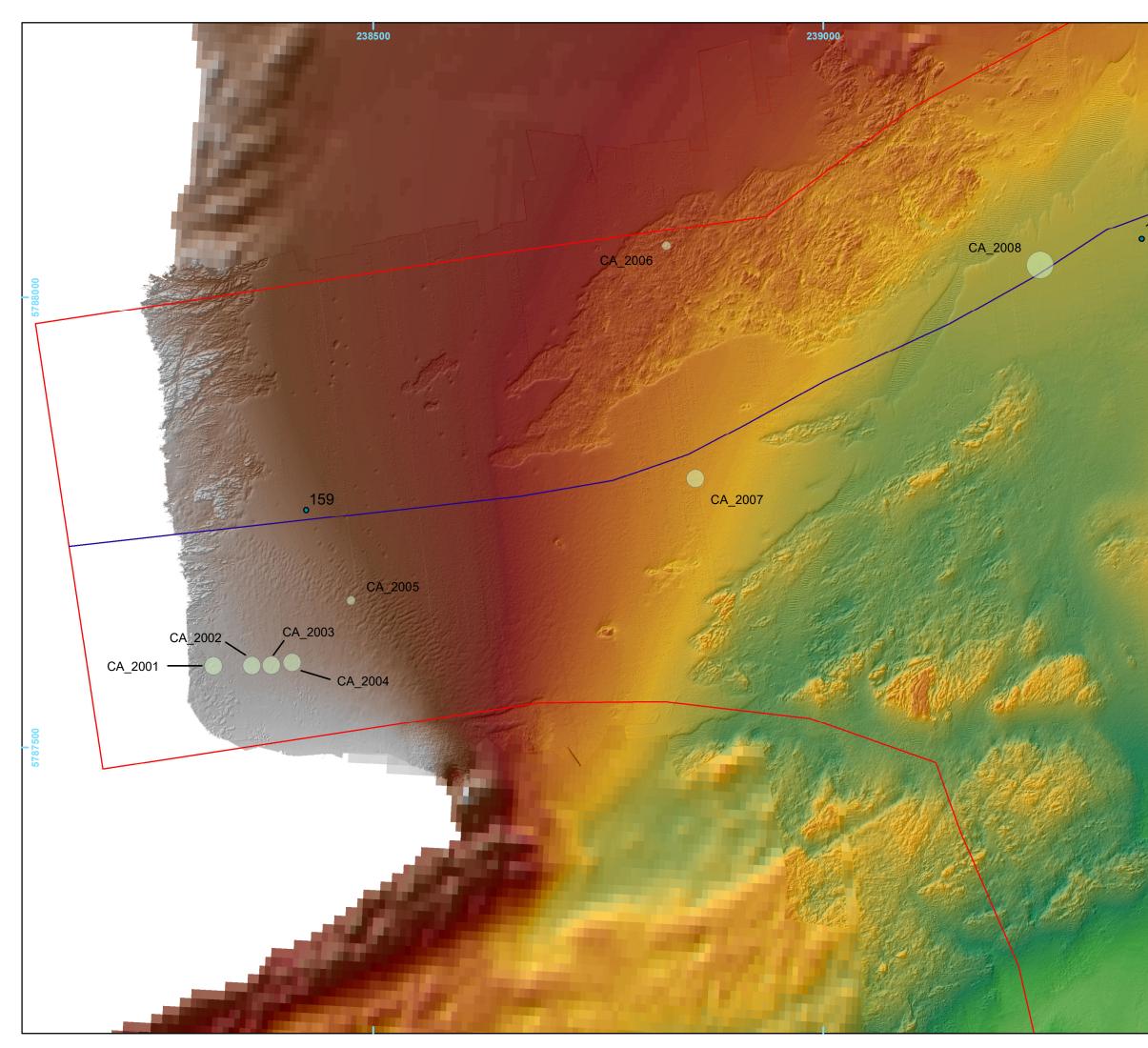
Cotswold Archaeology. 2019. Greenlink Interconnector Project: Archaeological review of foreshore, near shore and offshore survey data. CA report no. 770349_01

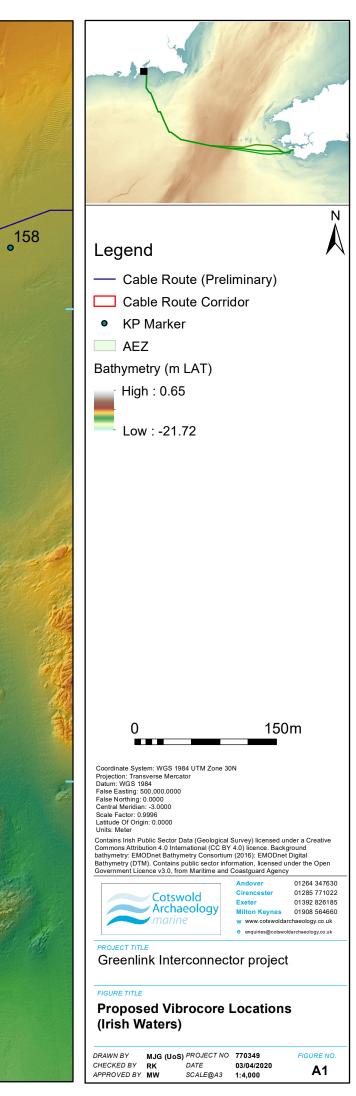
In our considered opinion these AEZs are sufficient to mitigate any impact from the proposed development on these anomalies. I hope this provides sufficient information to satisfy the queries of the Underwater Archaeology Unit.

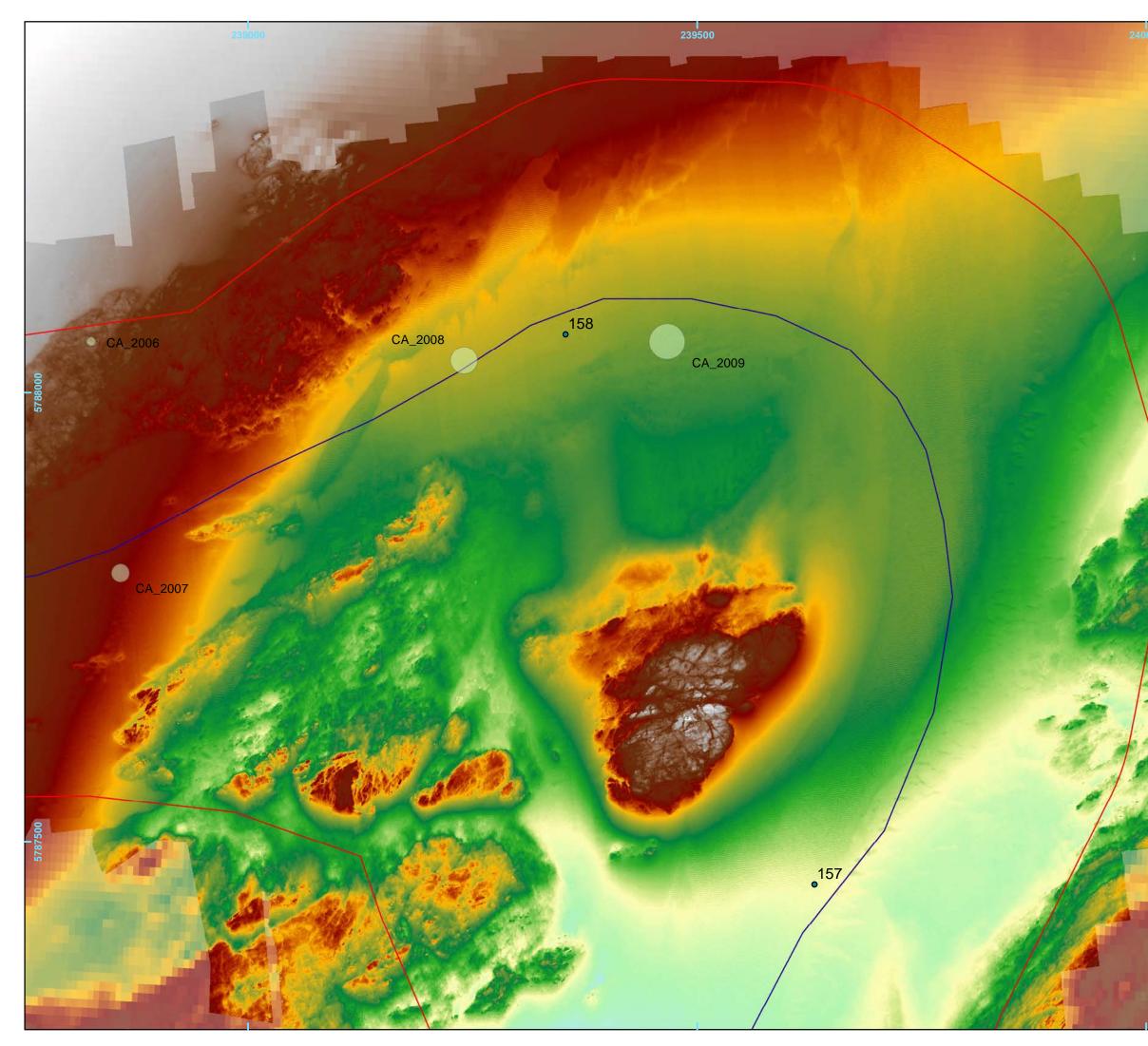
Yours sincerely

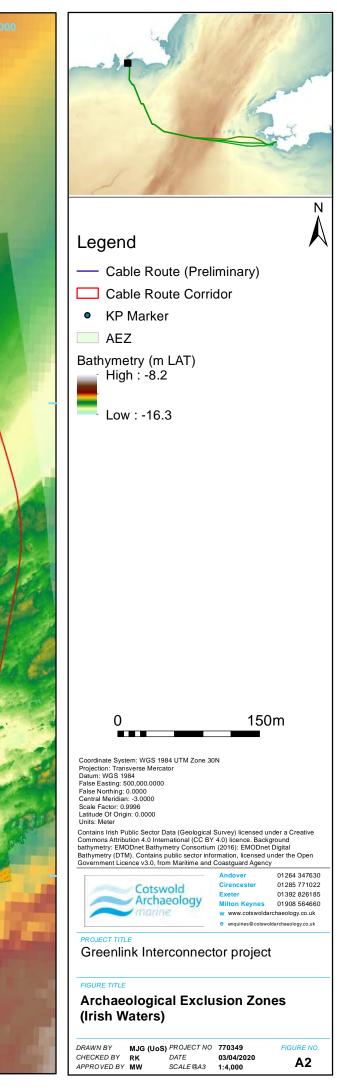
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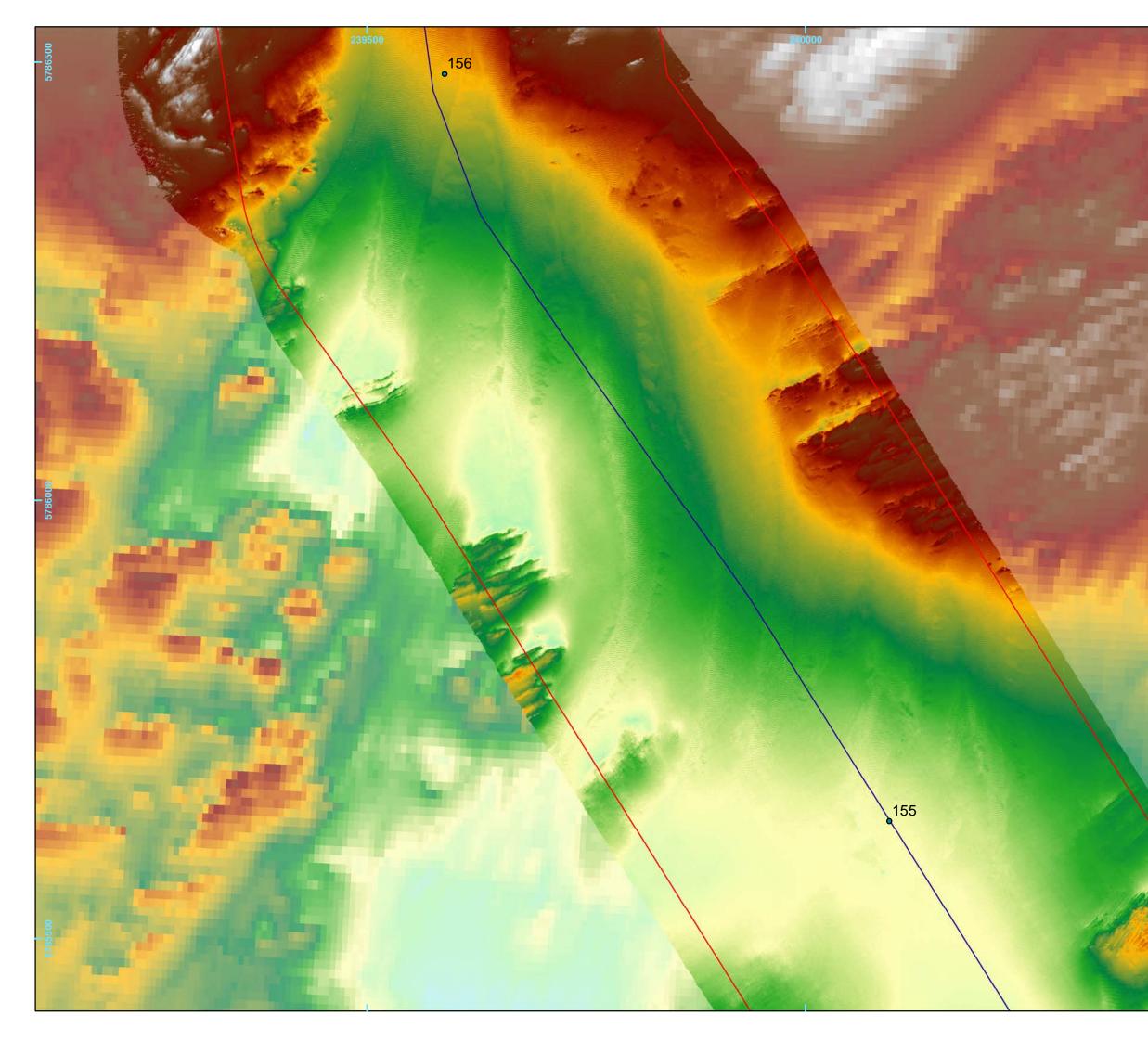
Michael Walsh Lead Marine Consultant

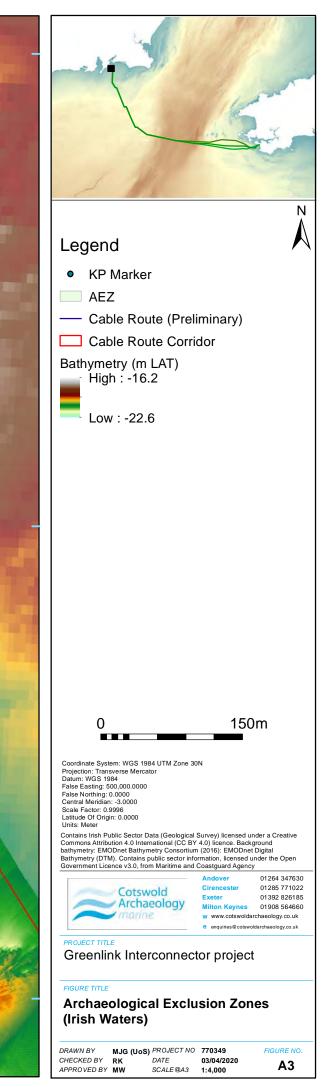


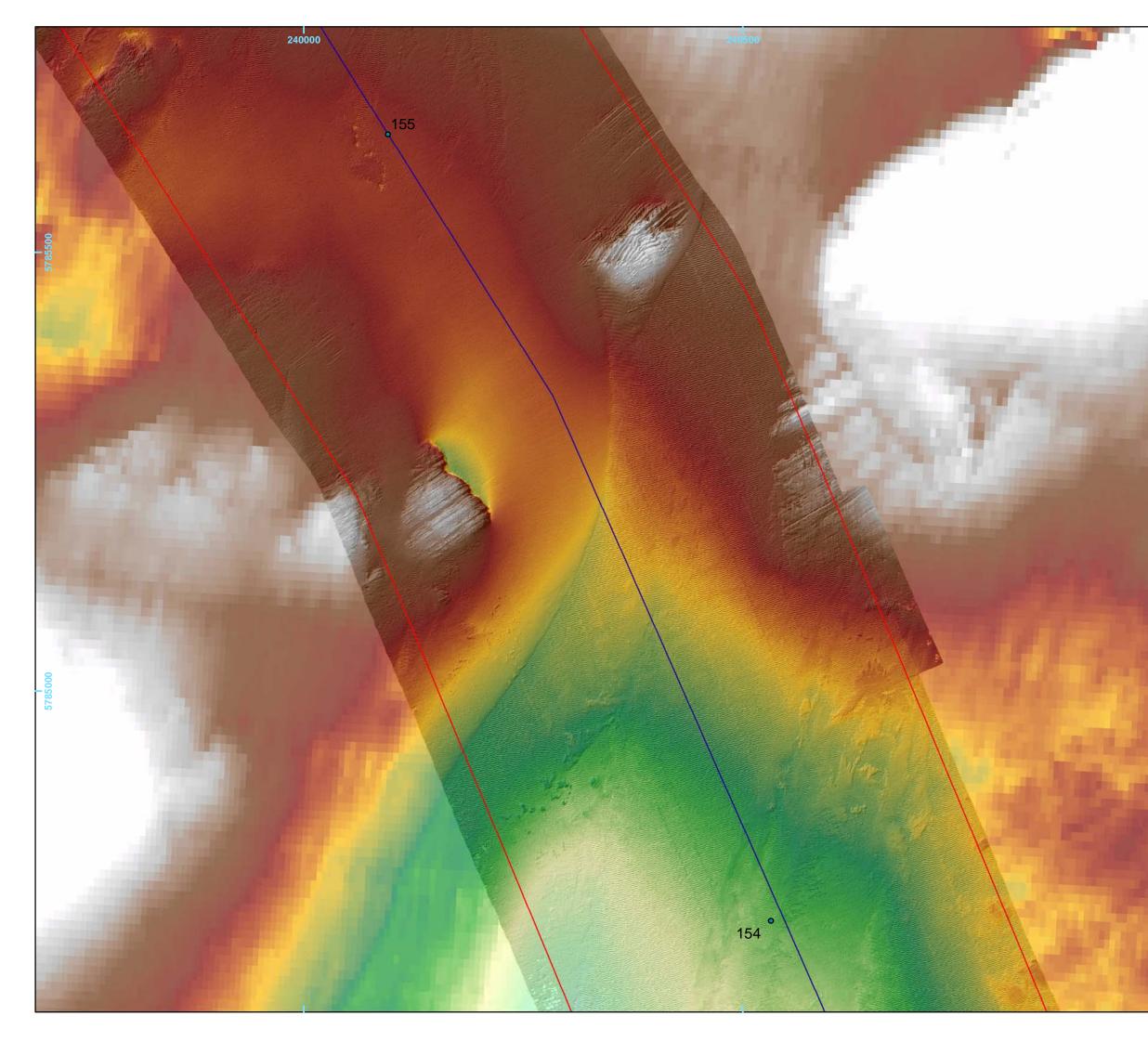


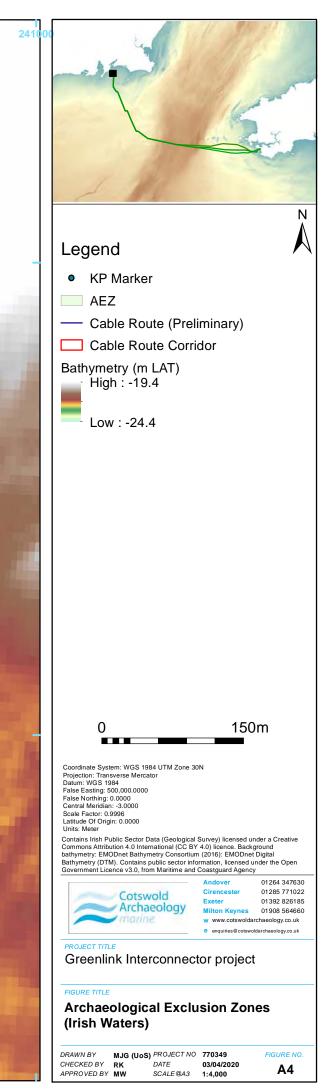


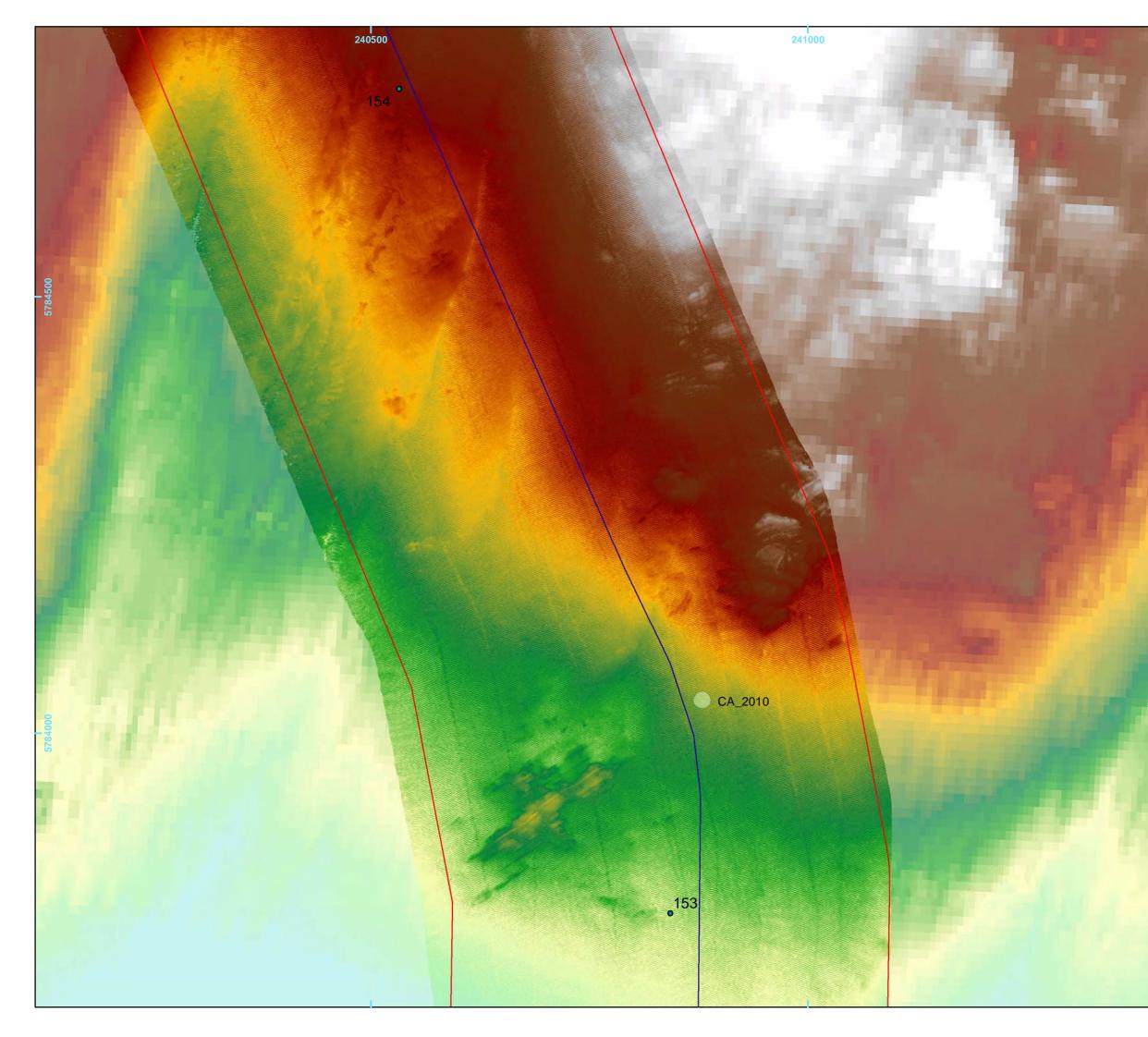


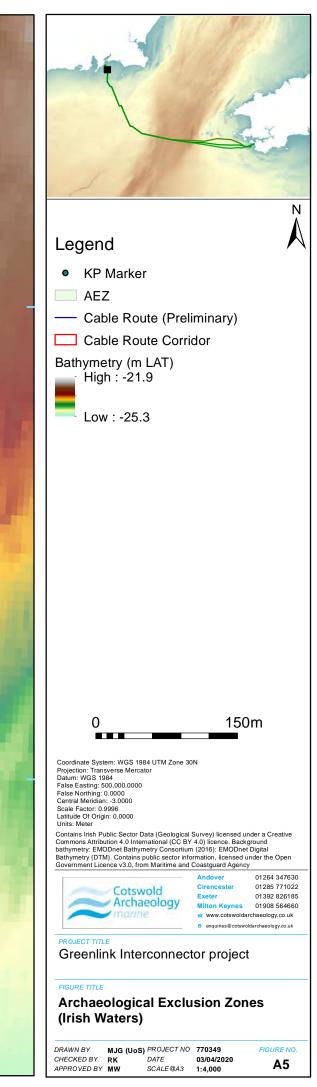


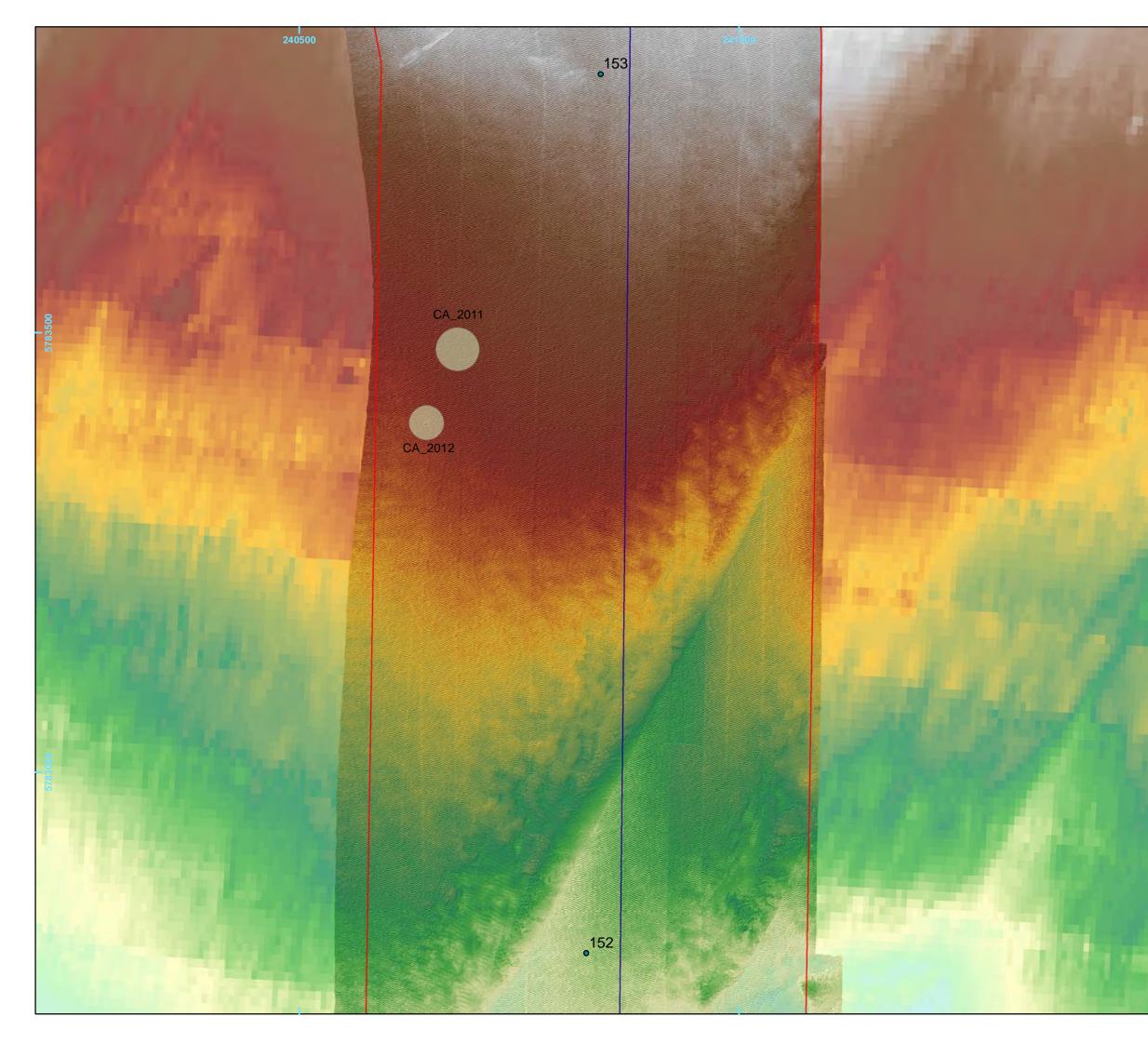


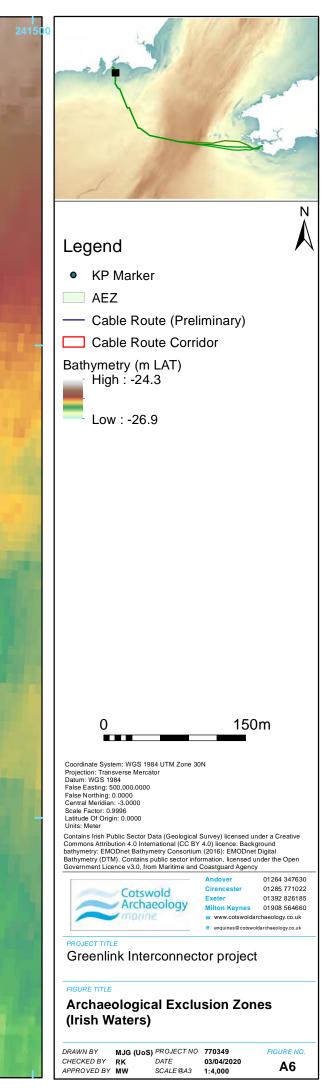


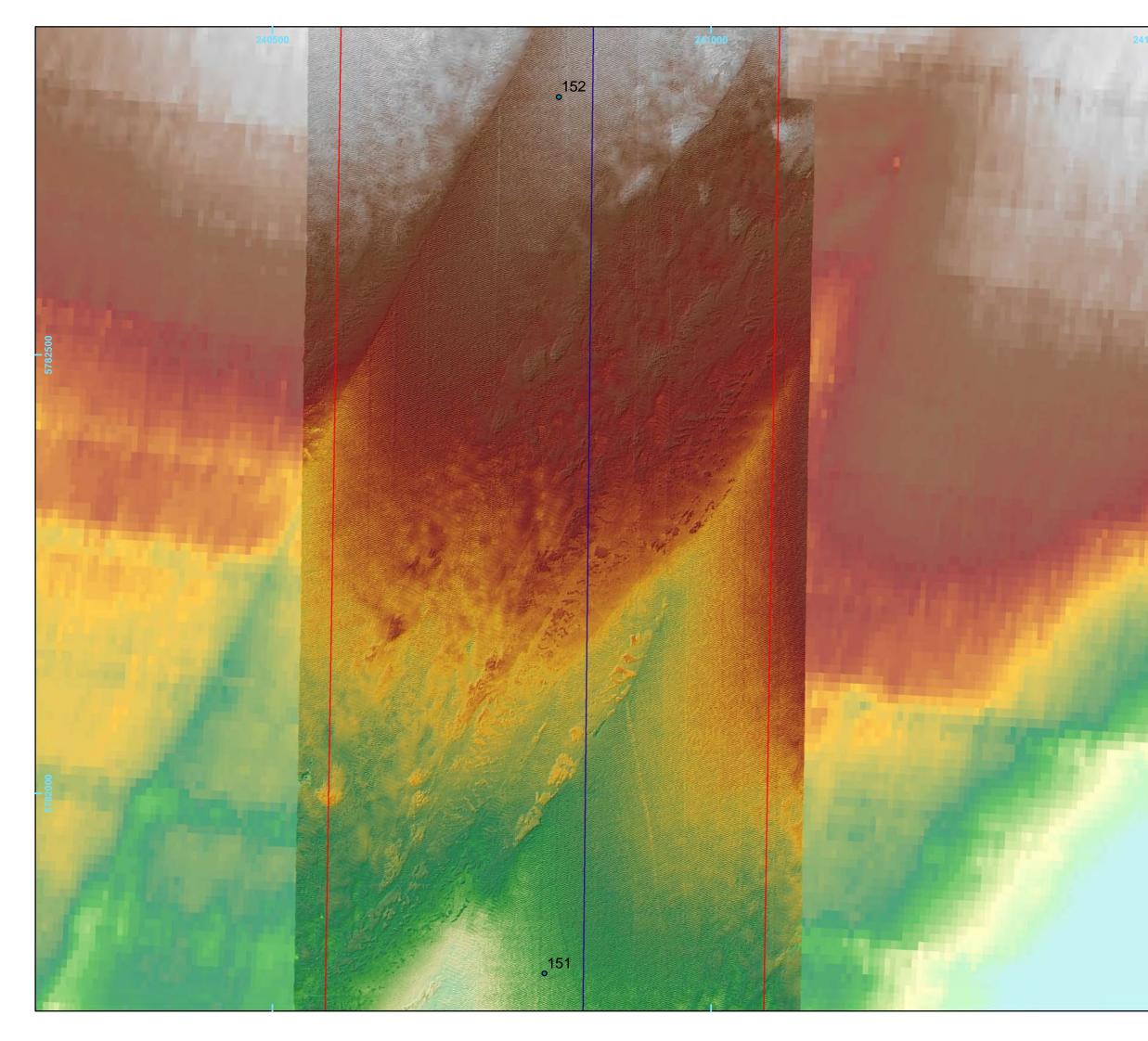


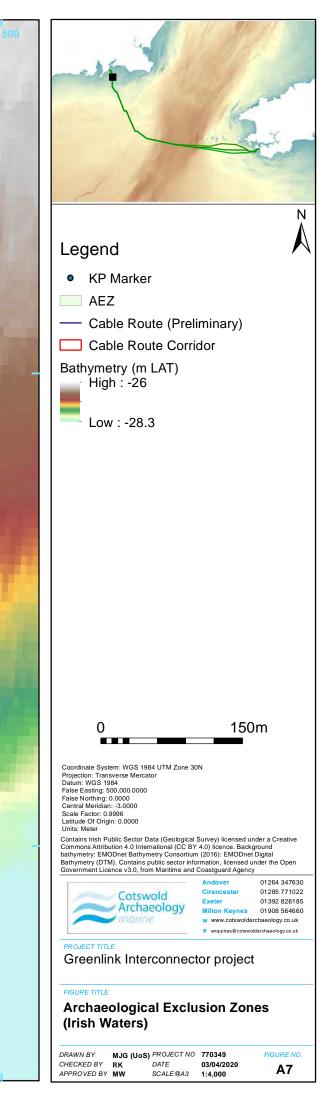


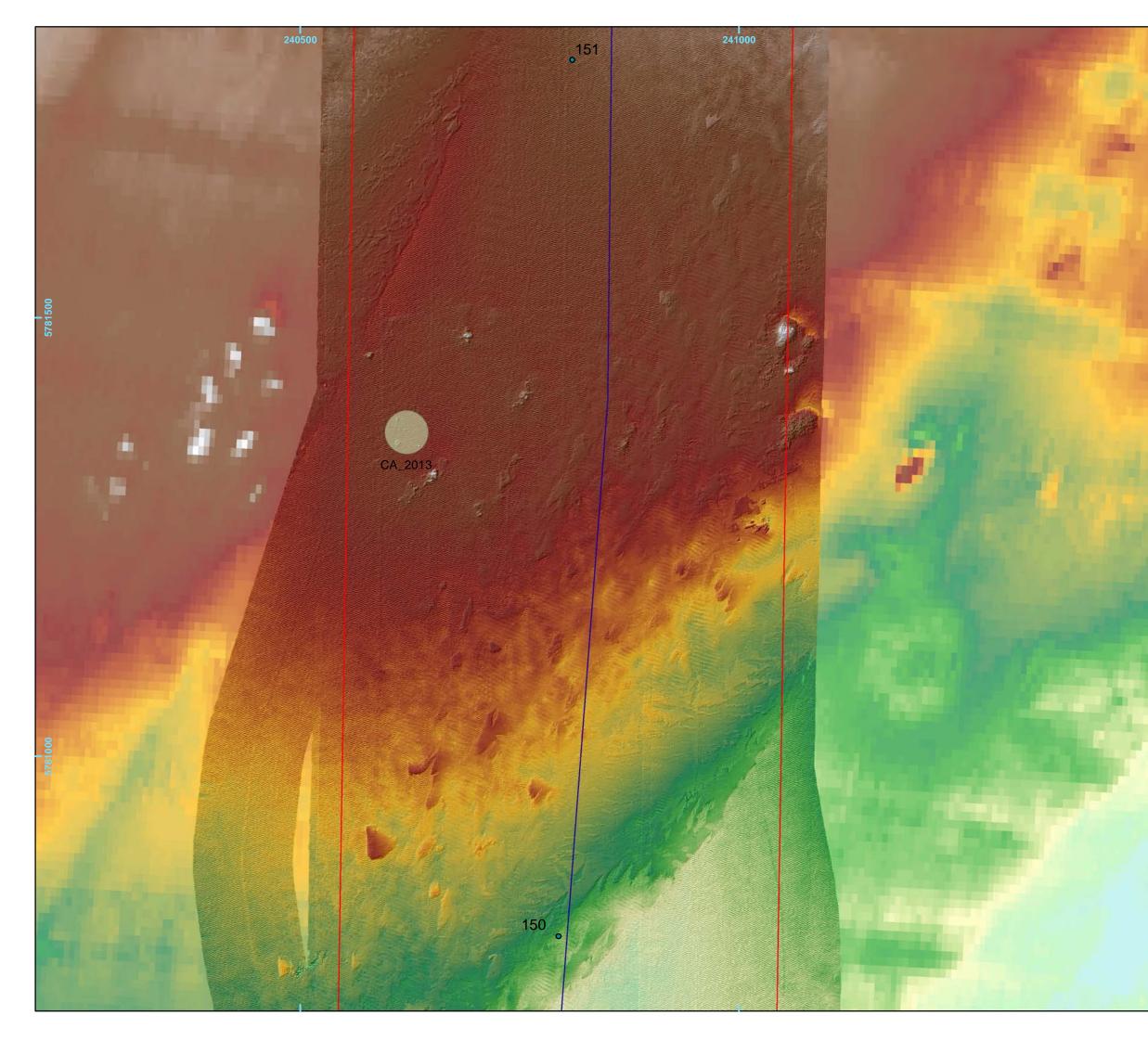


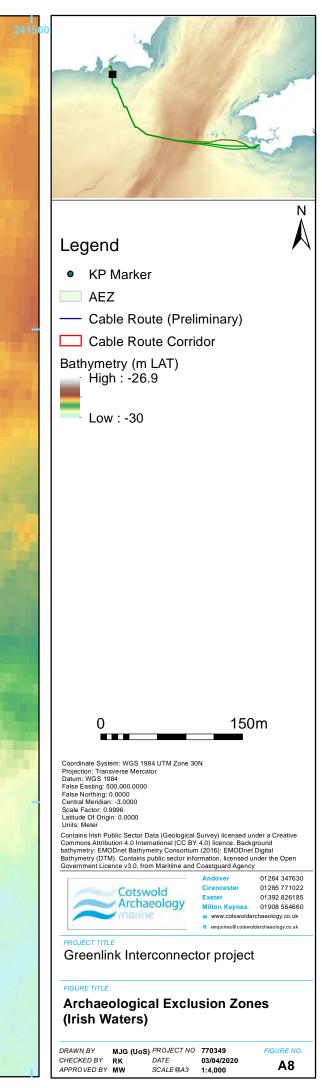


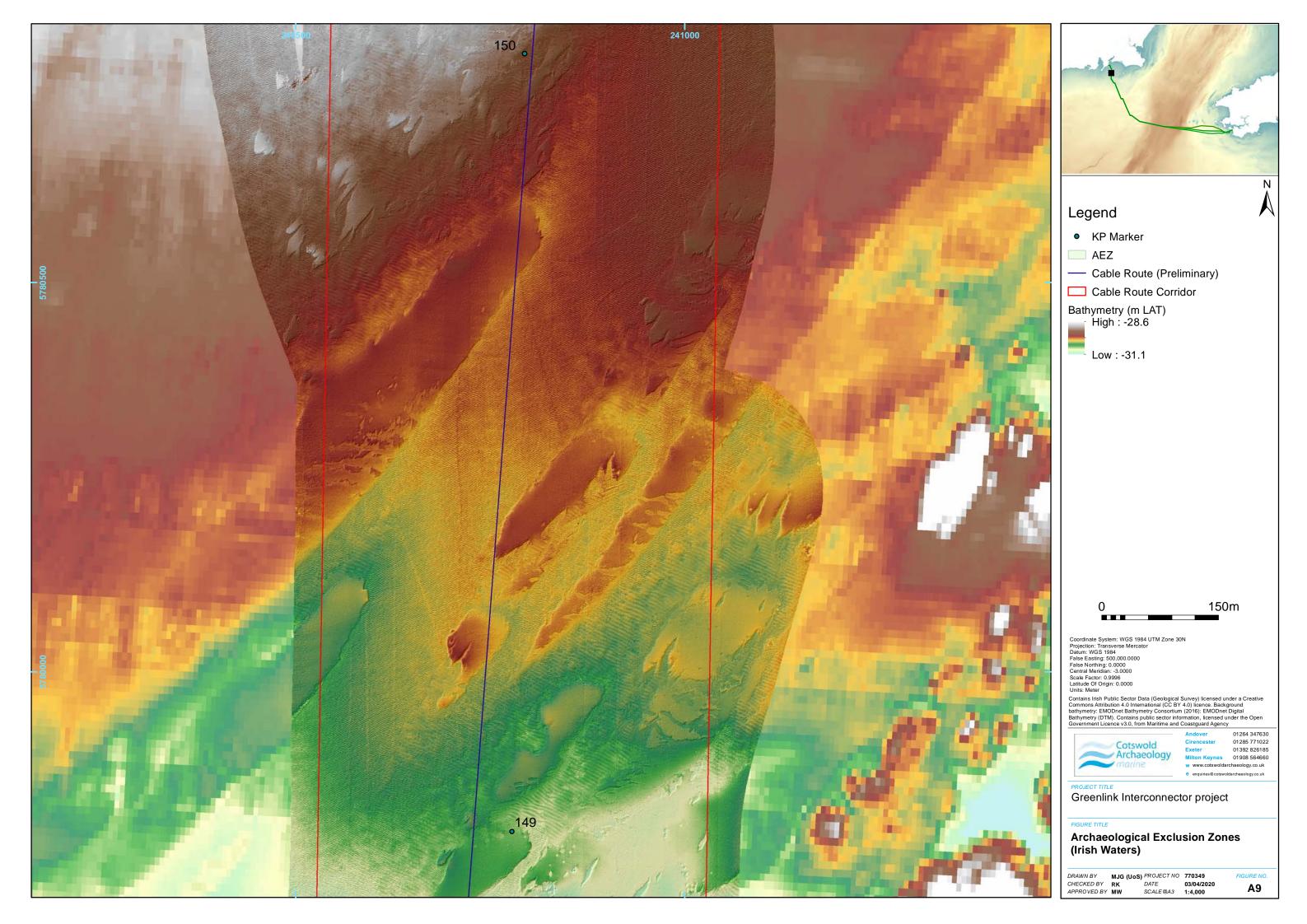


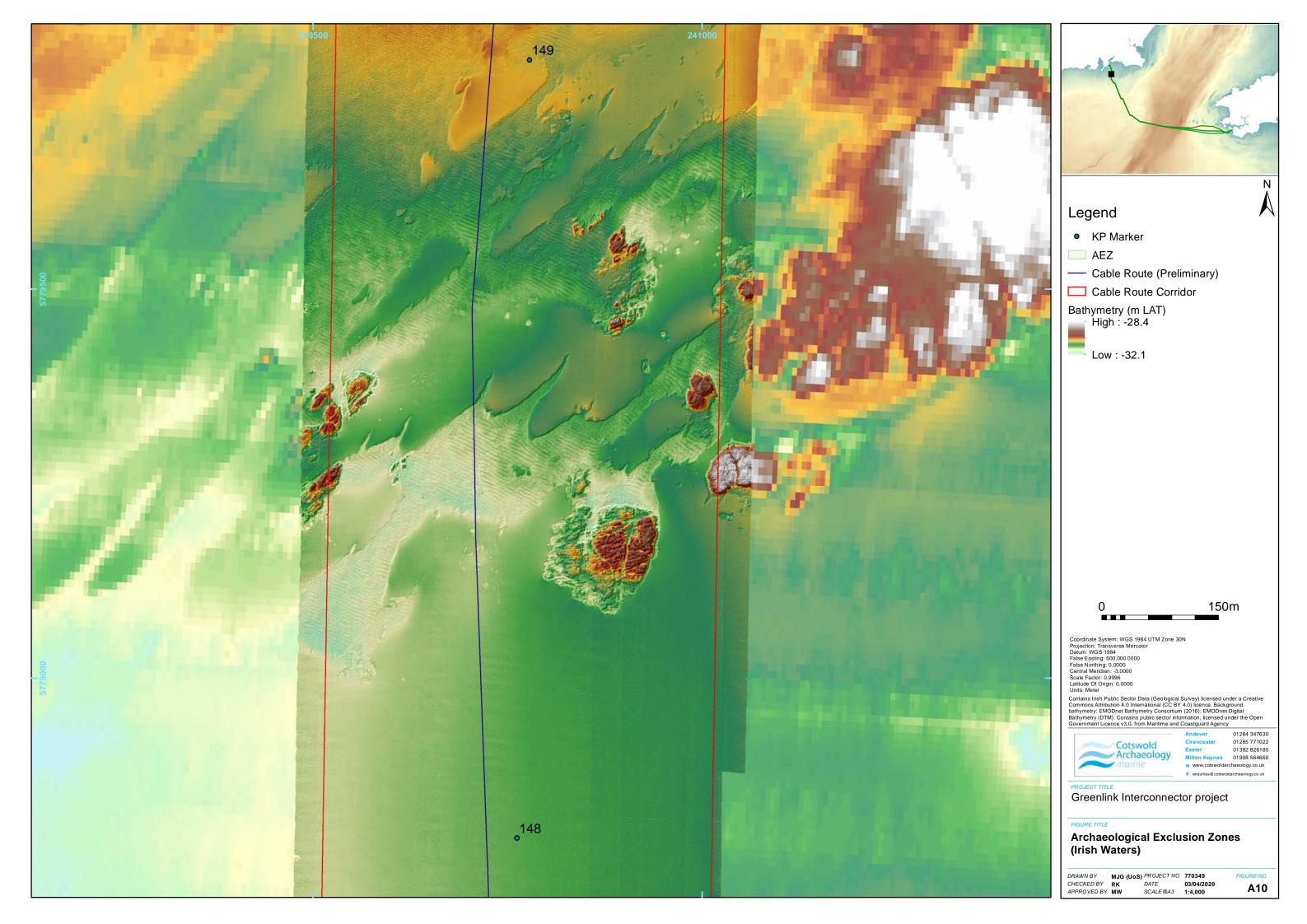


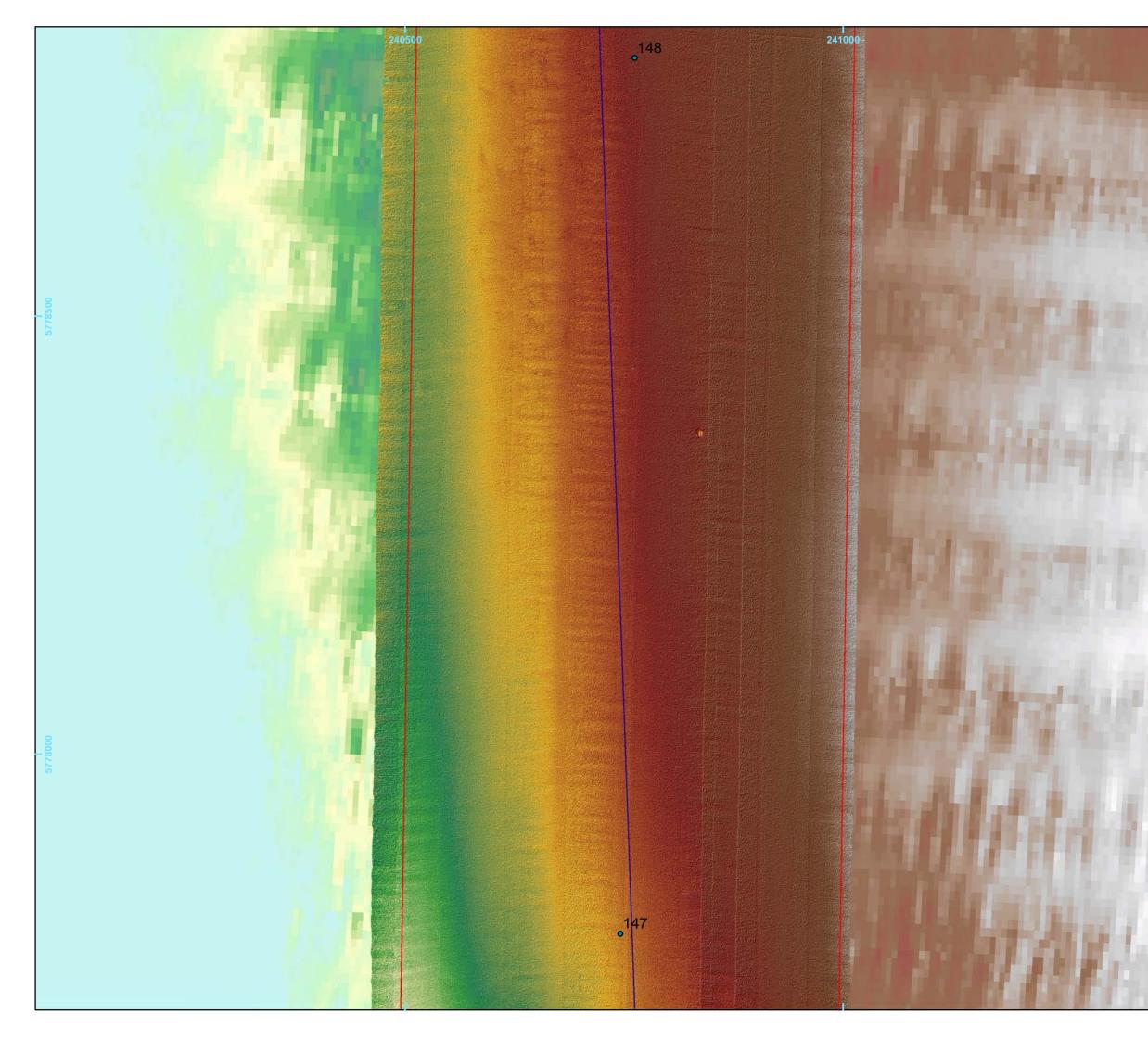


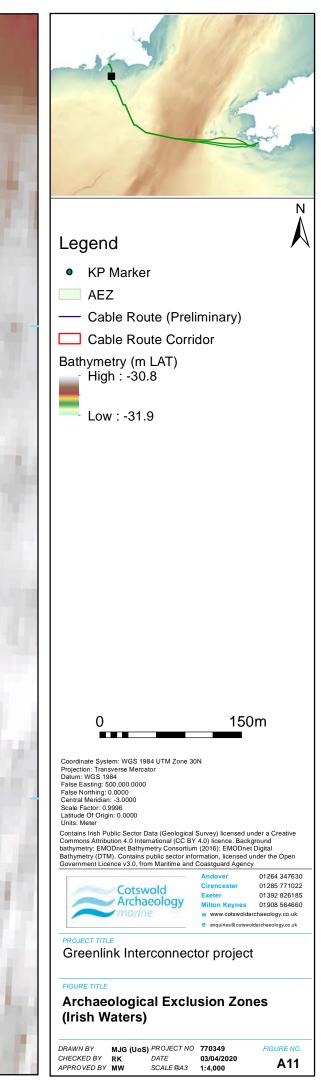


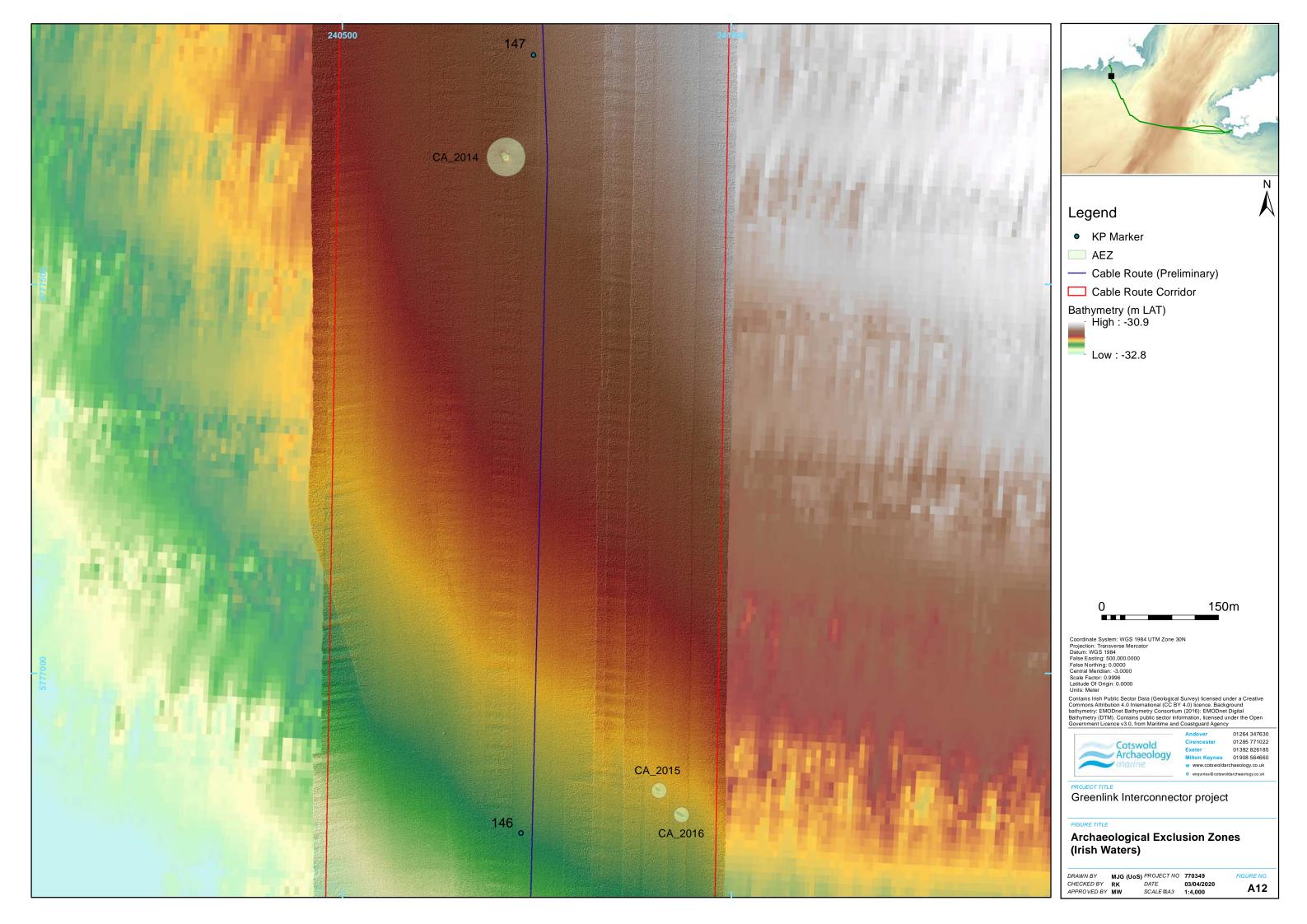


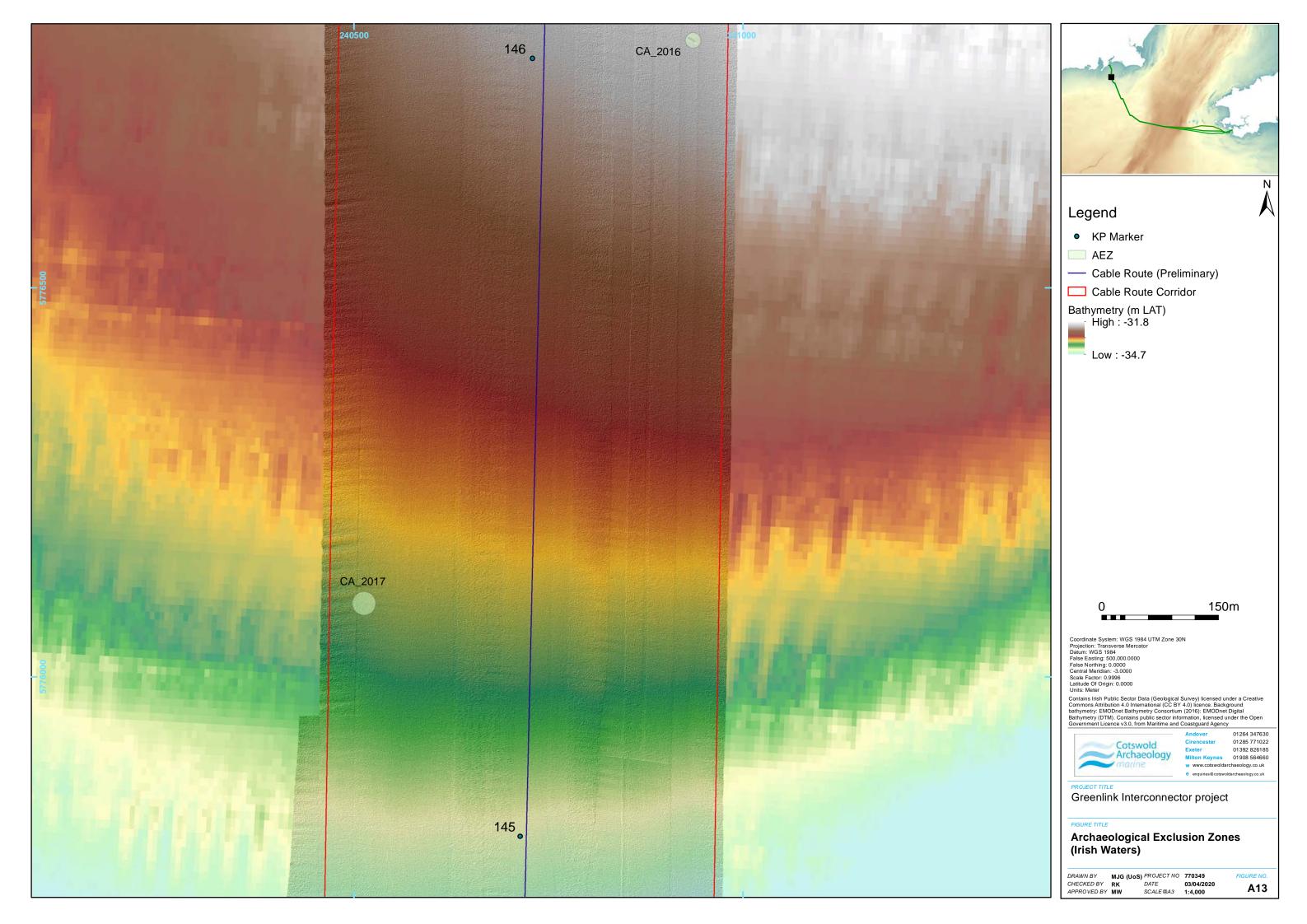


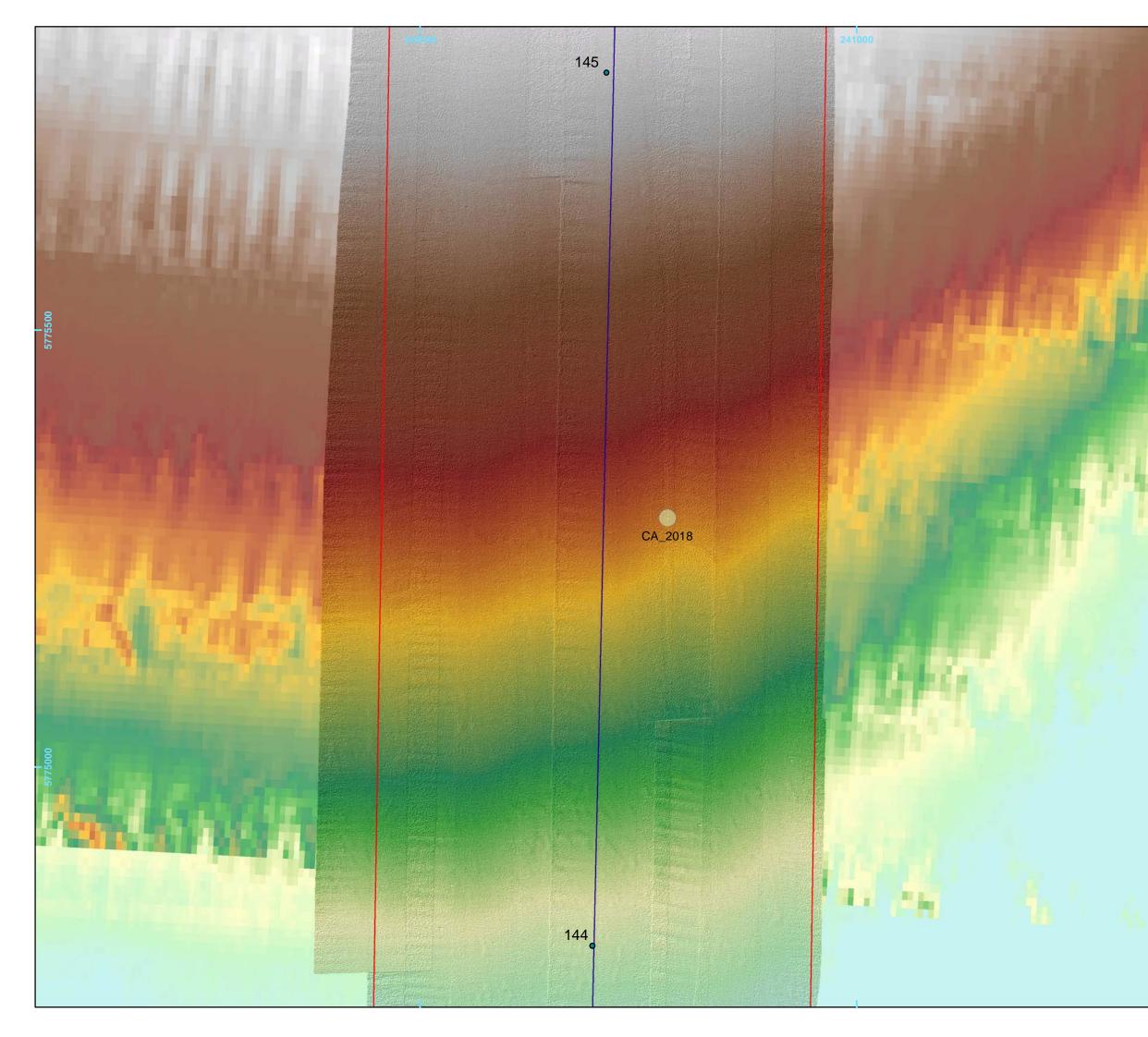


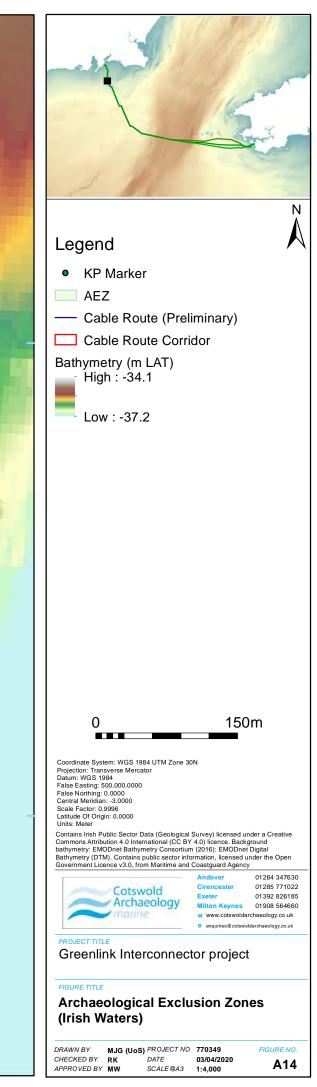


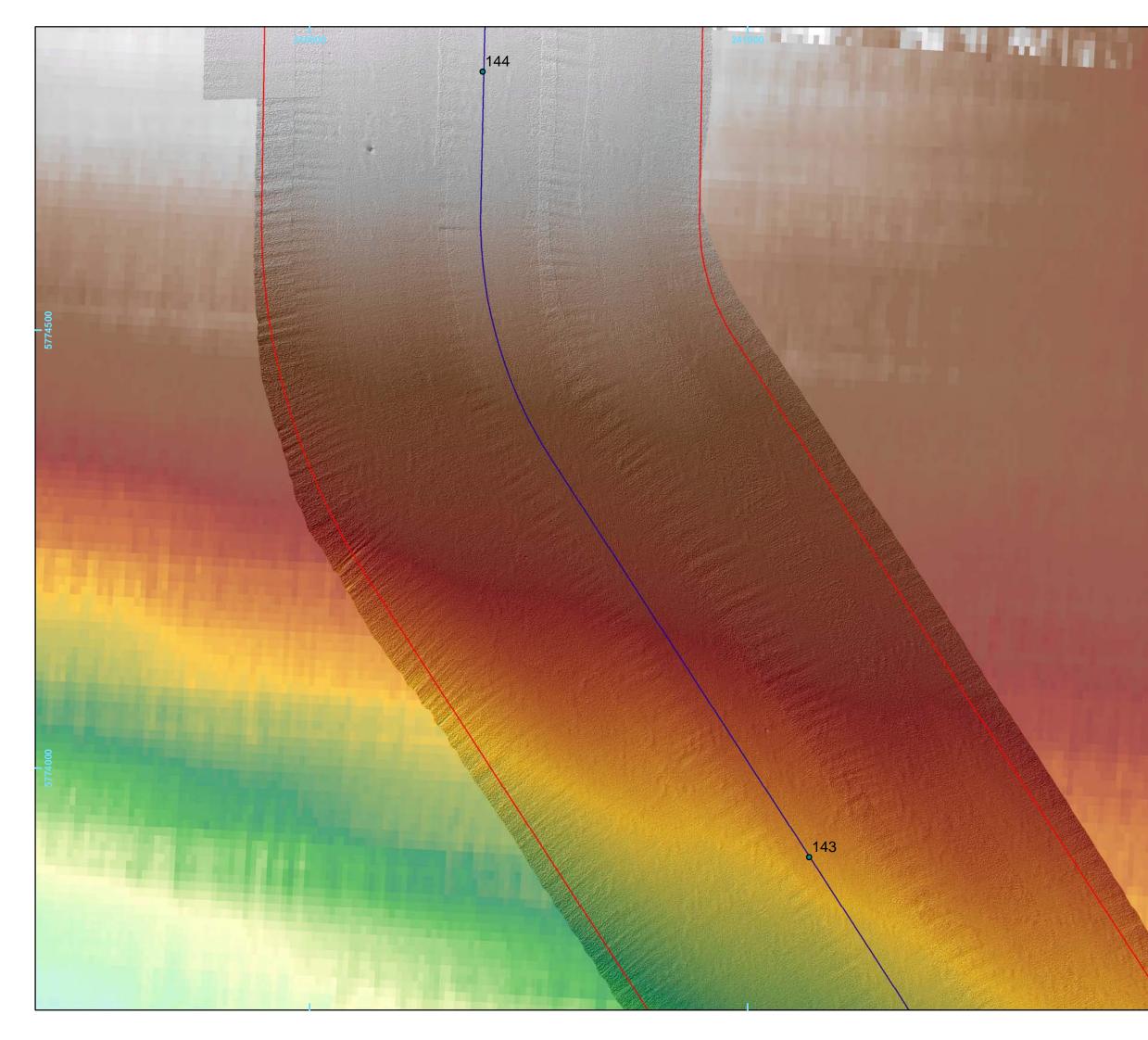




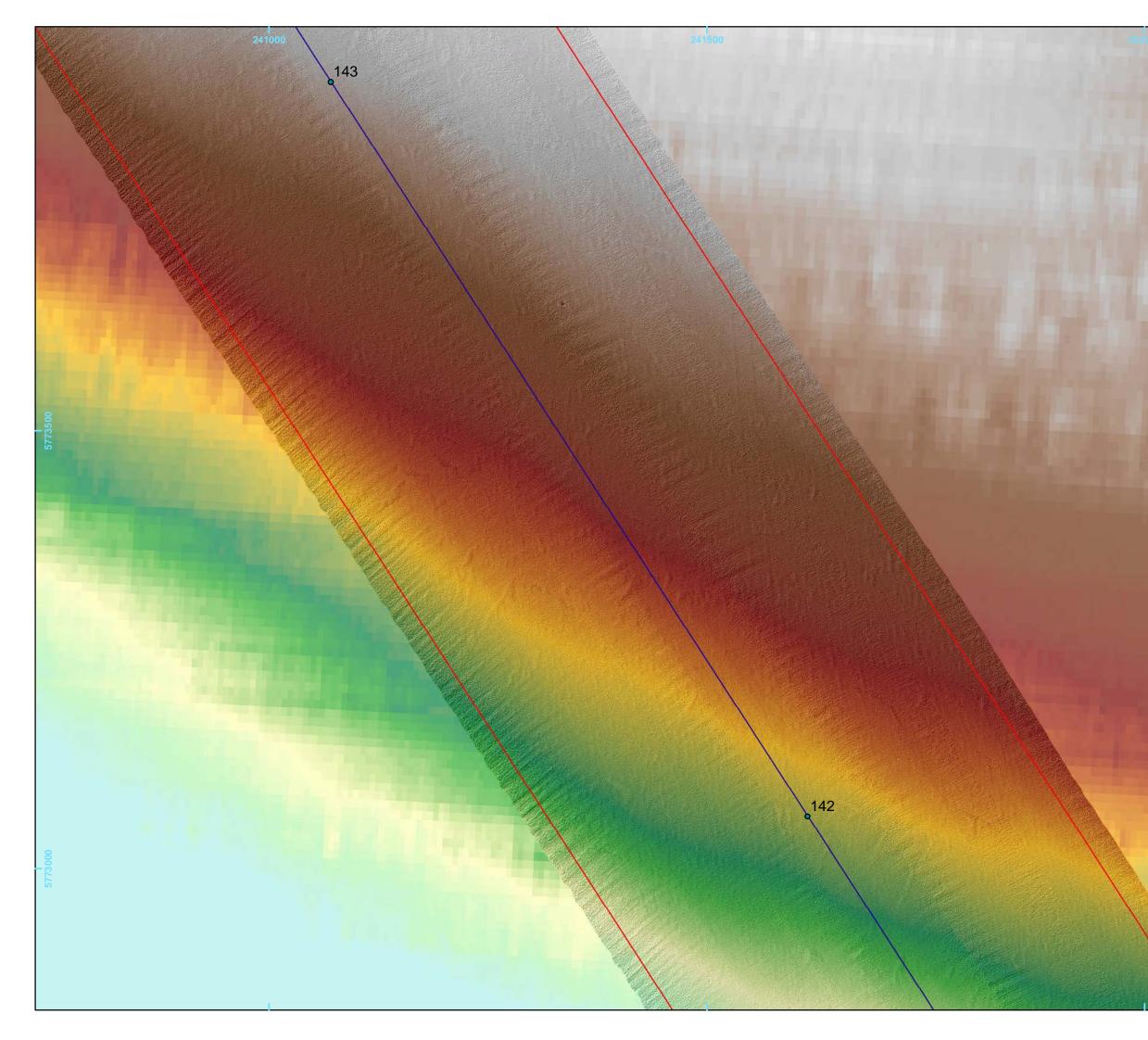




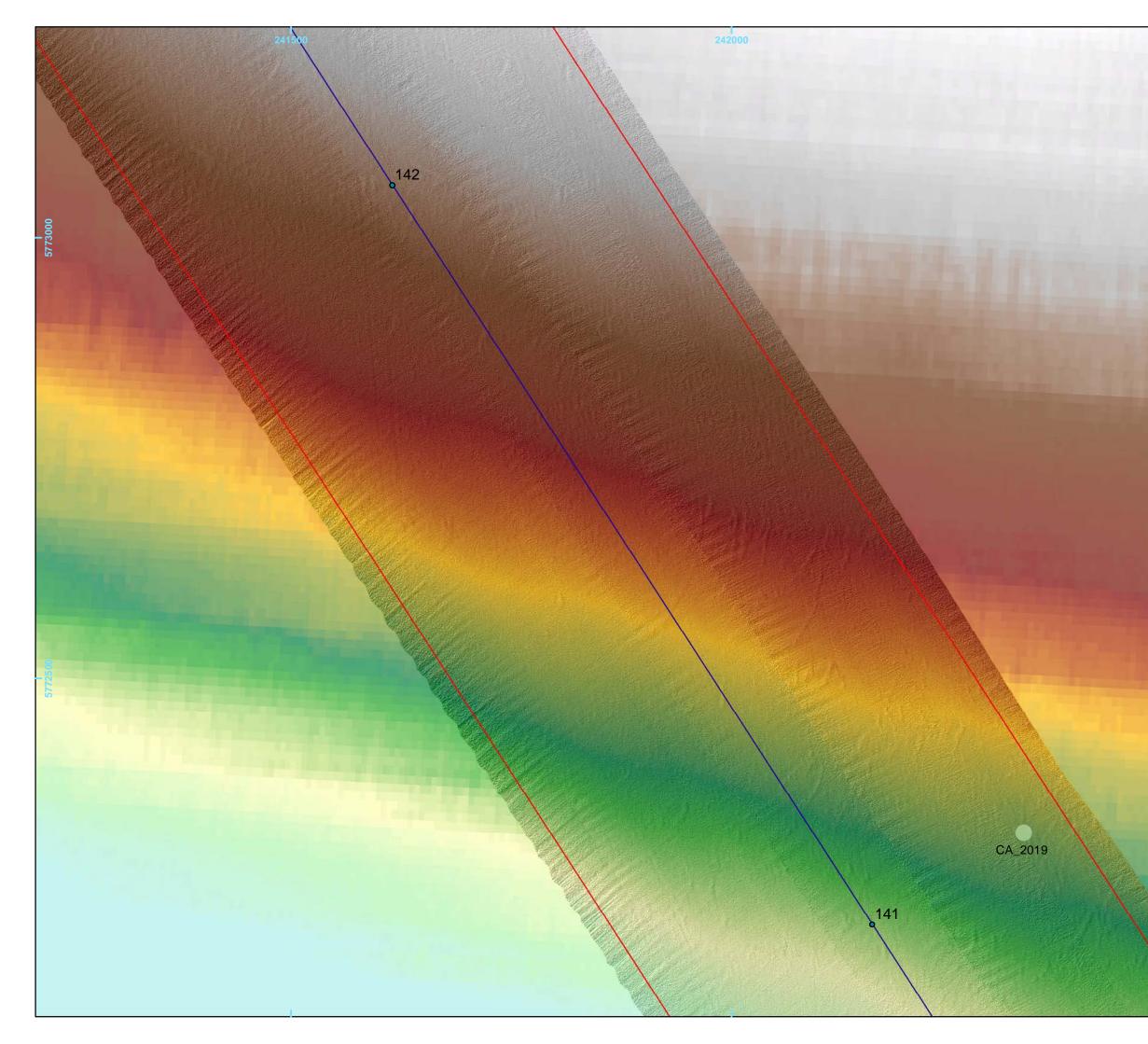




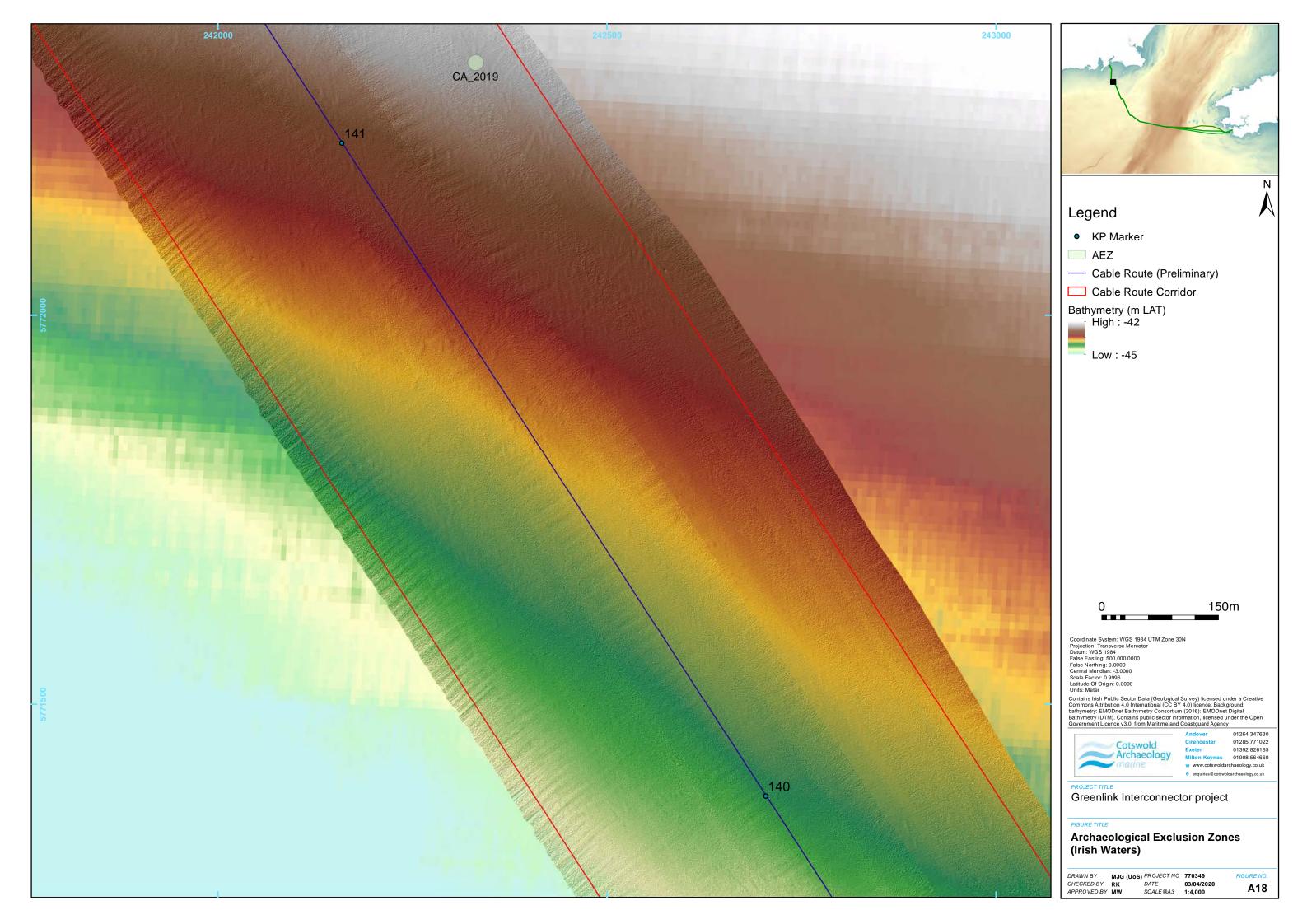


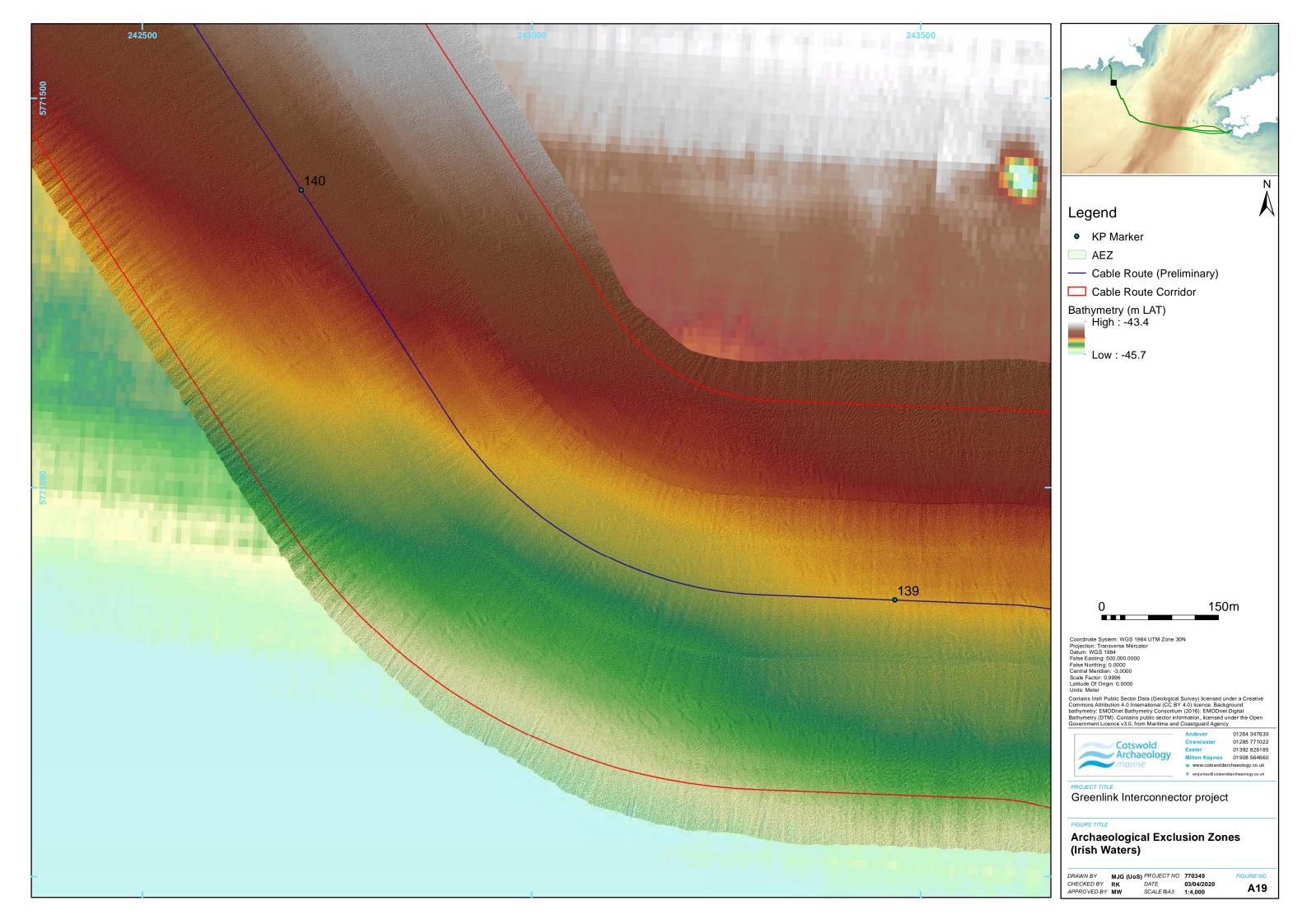


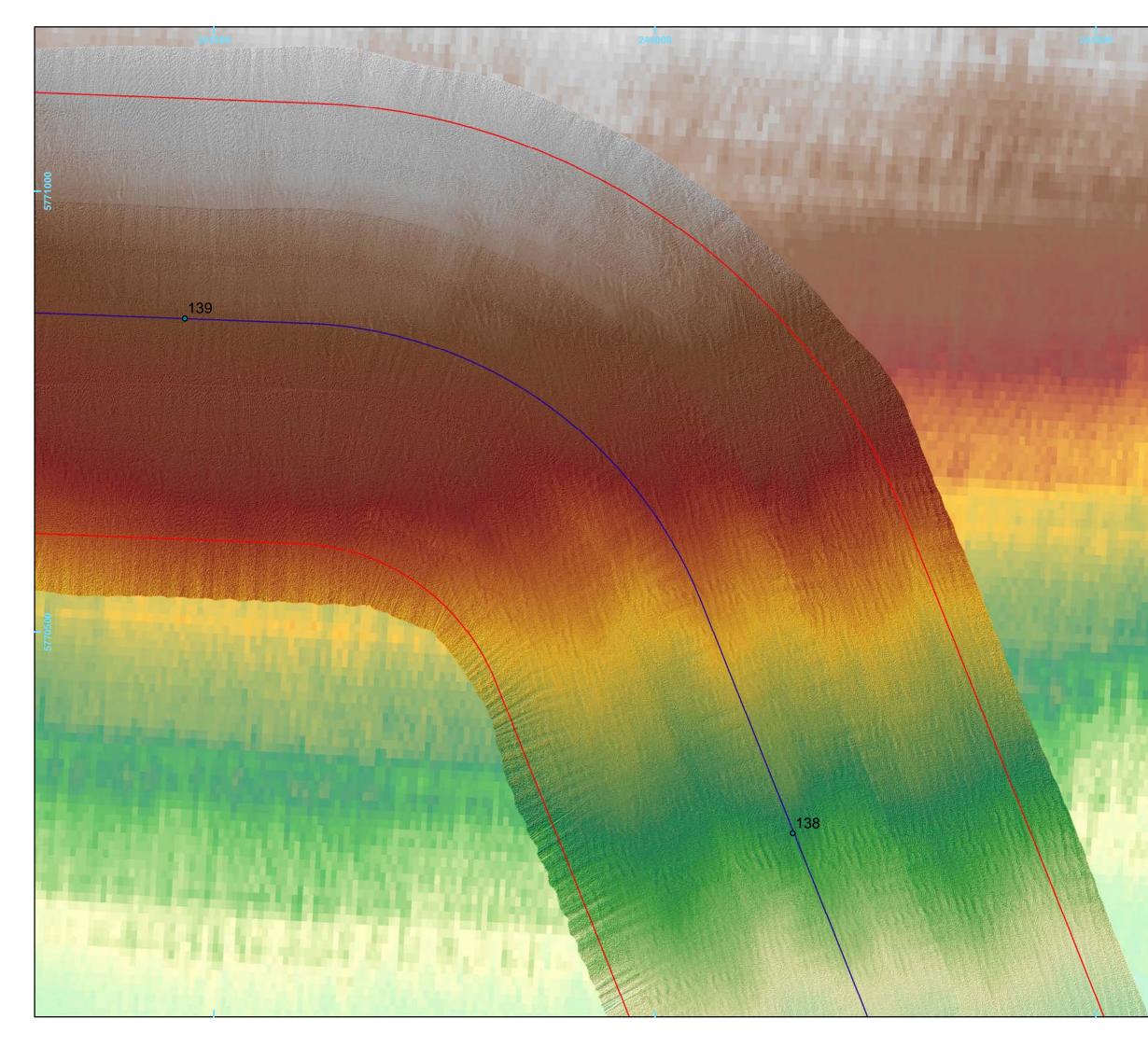


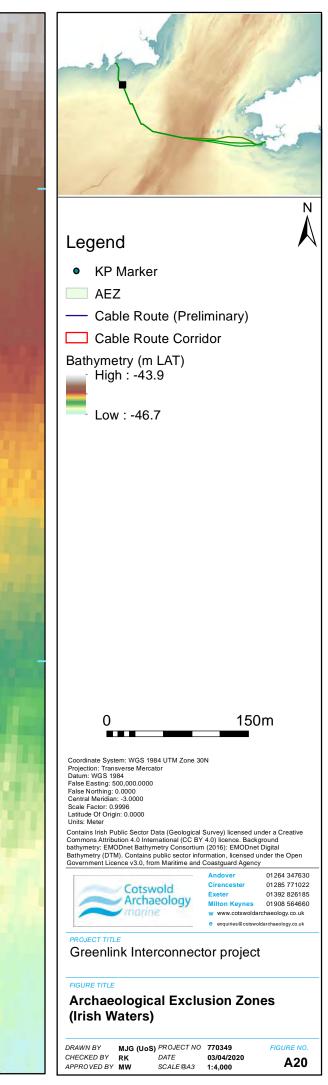


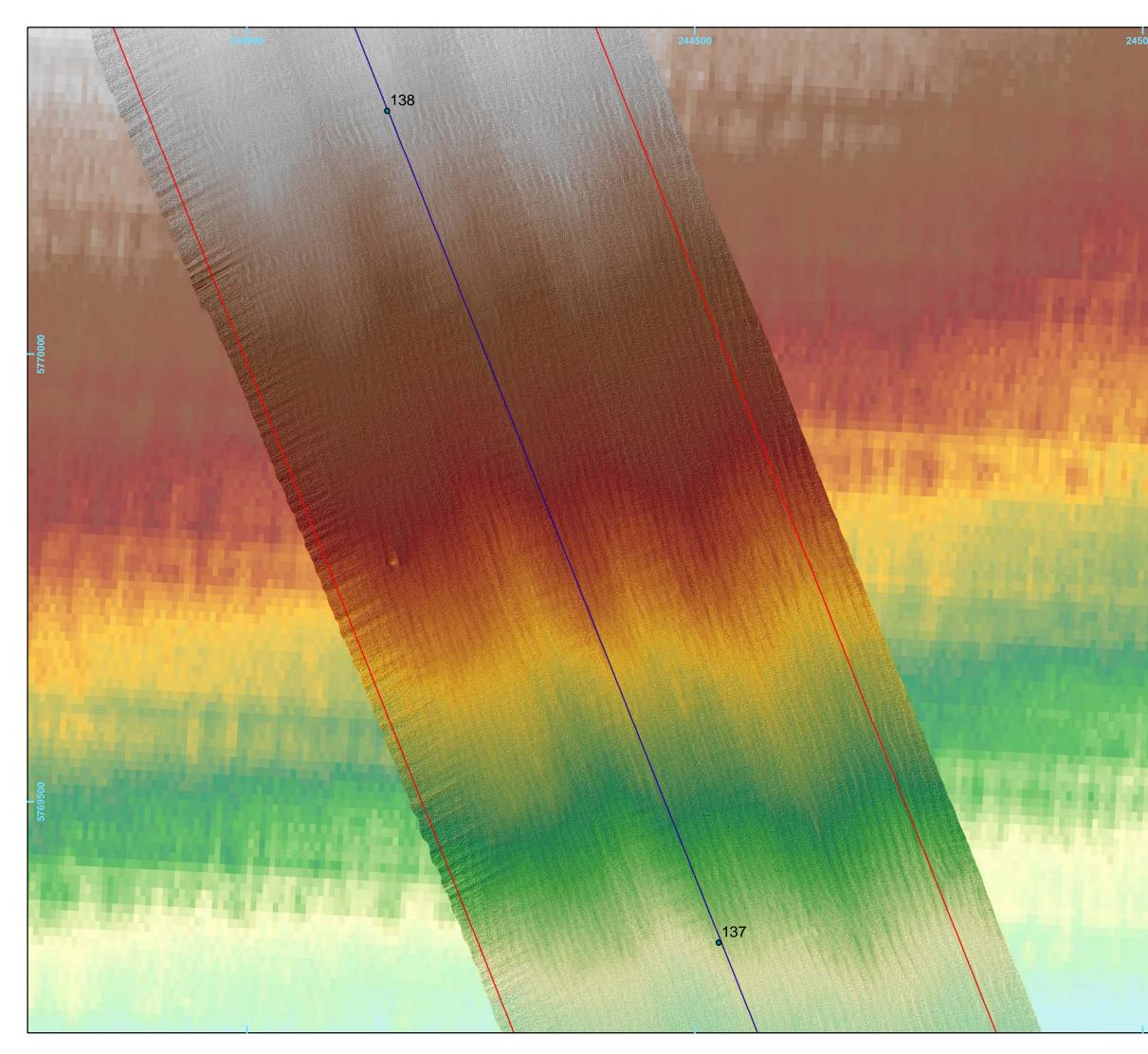


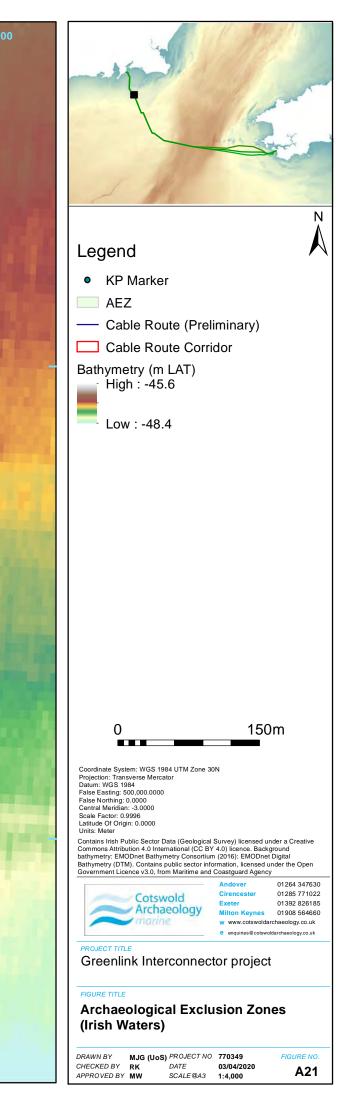


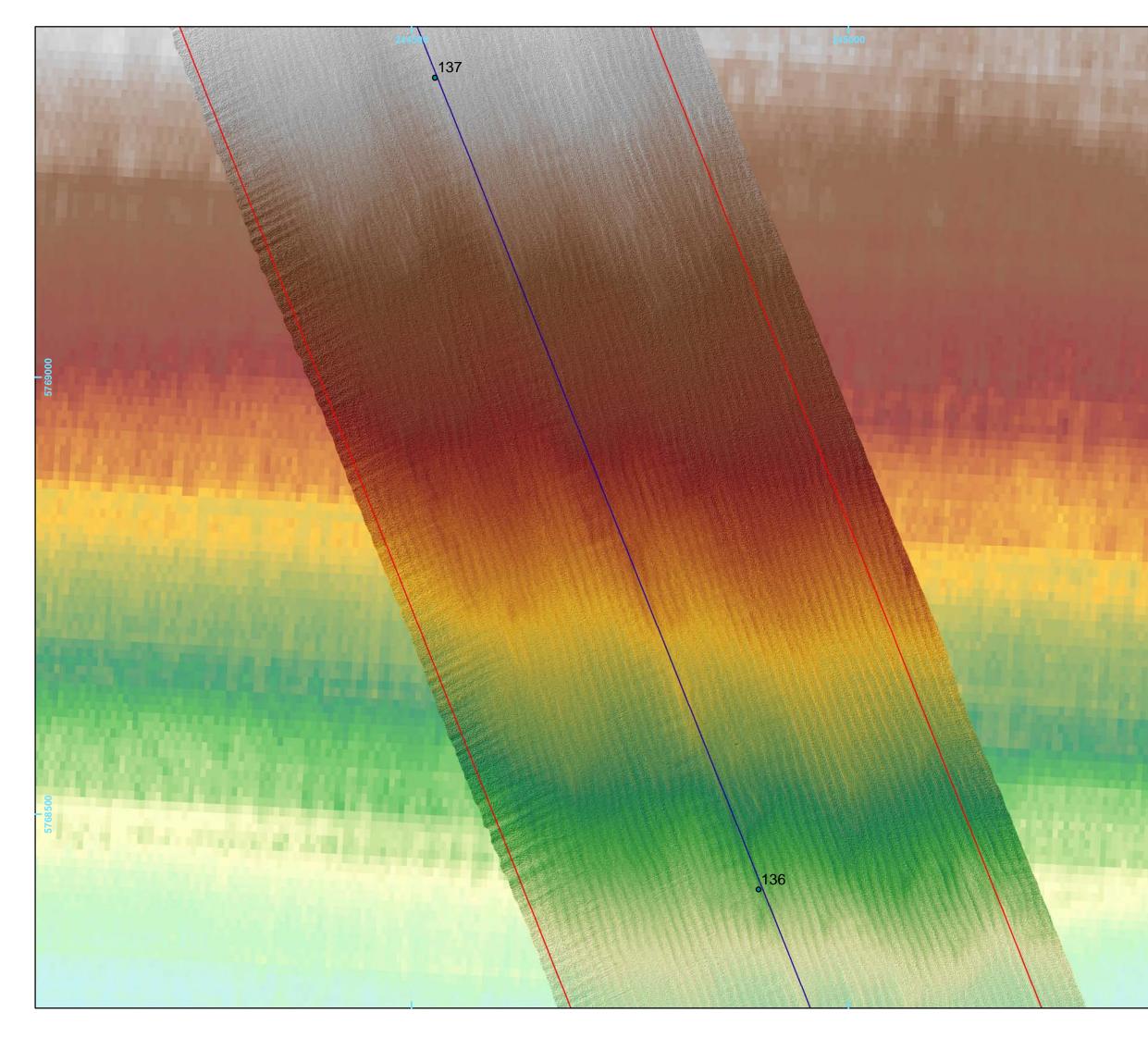


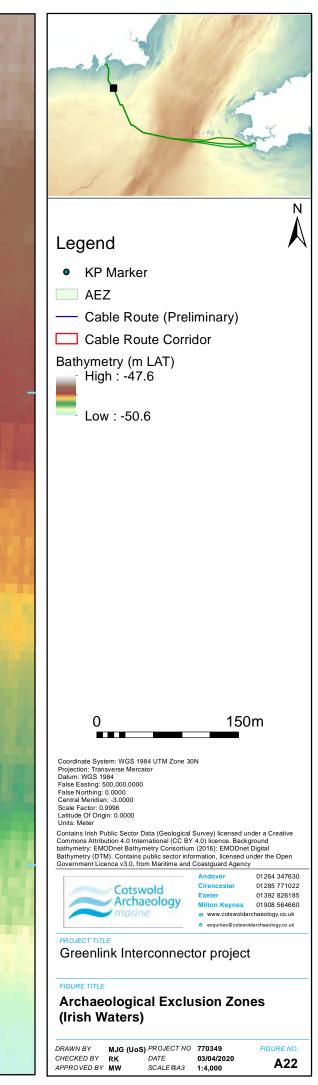


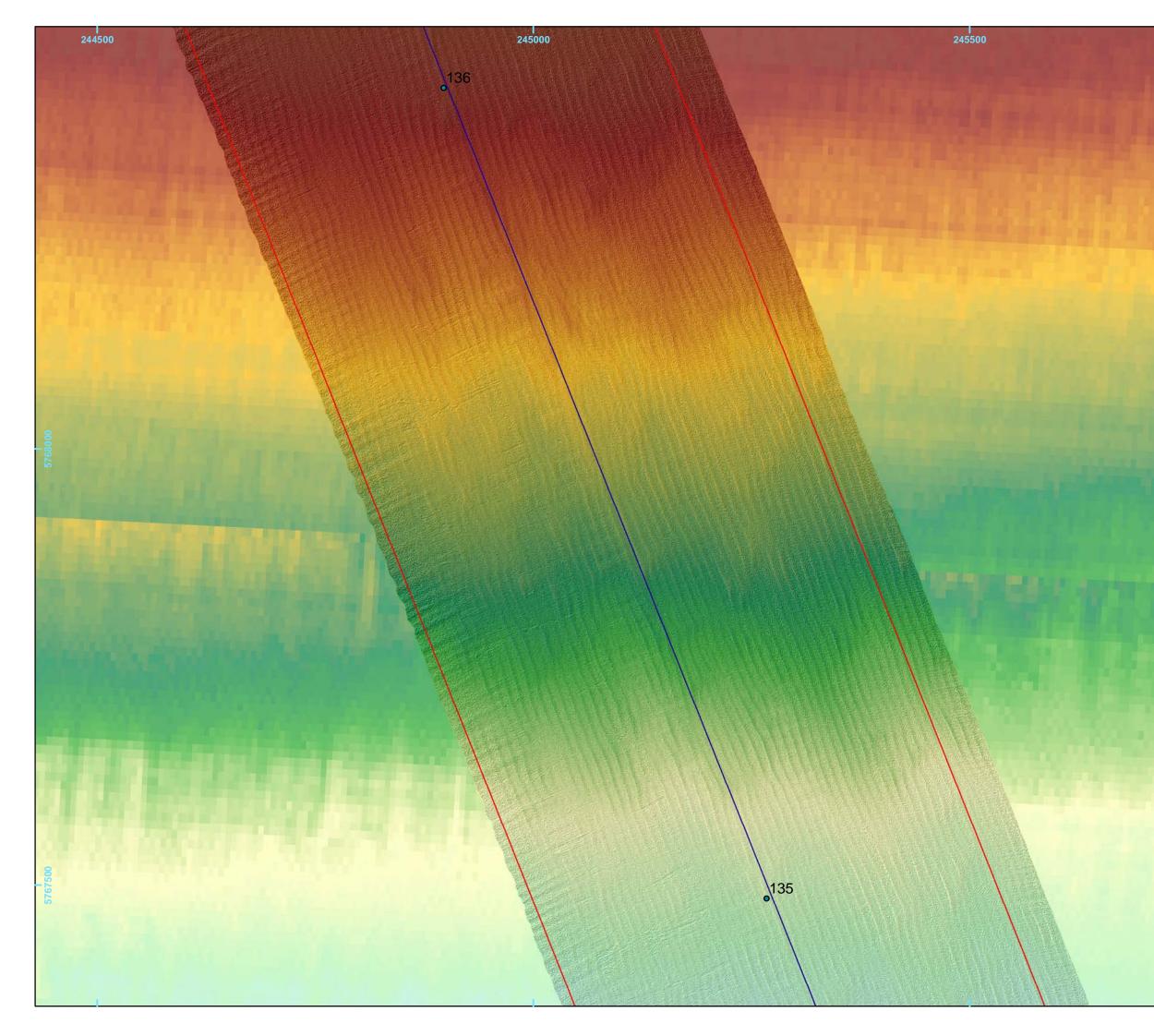


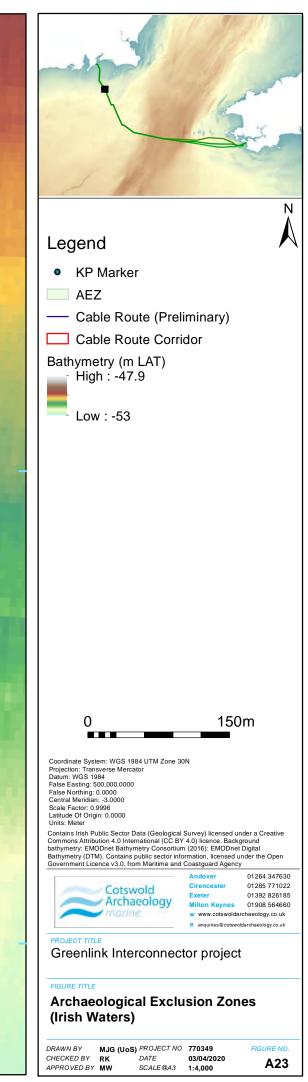


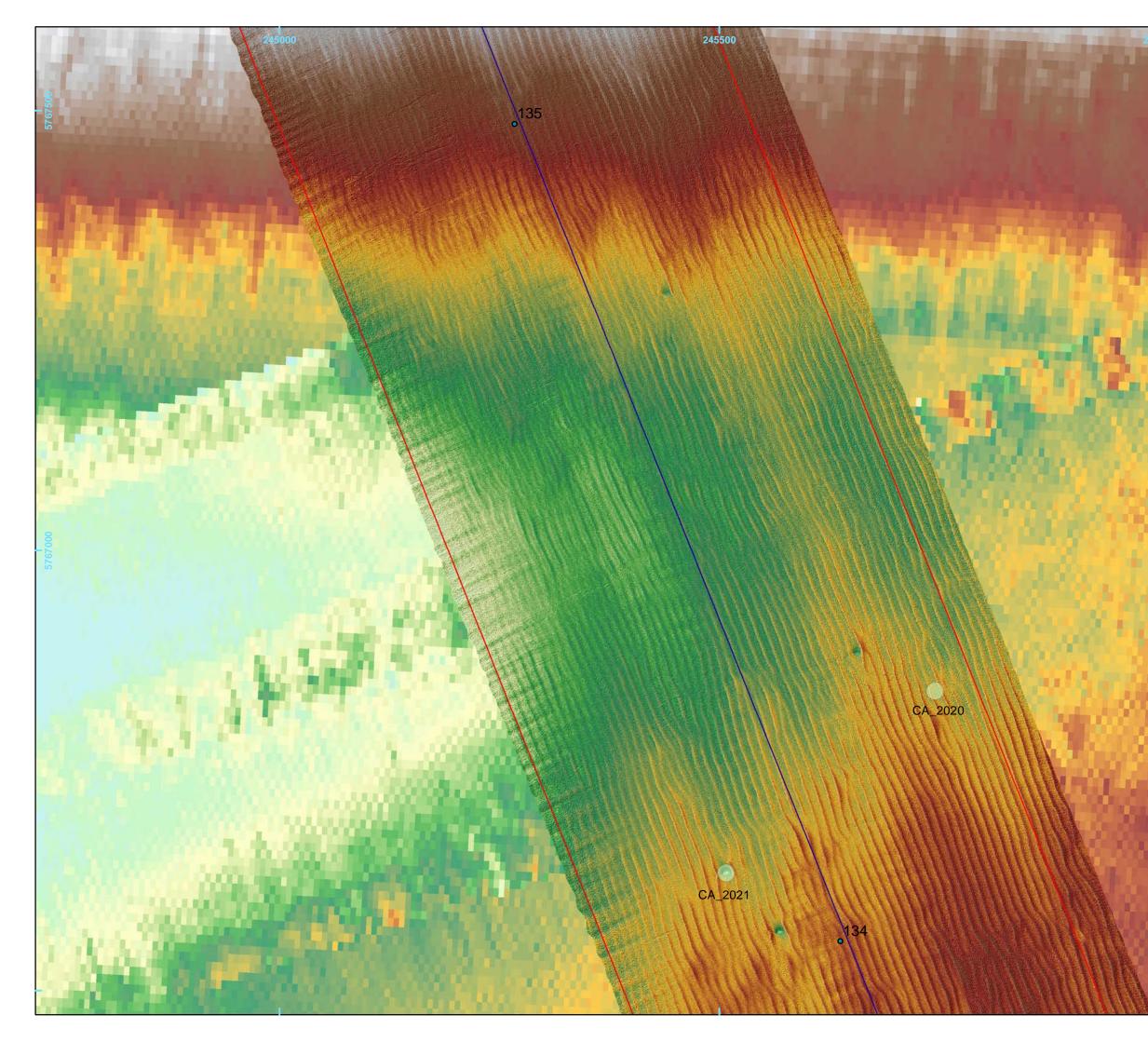


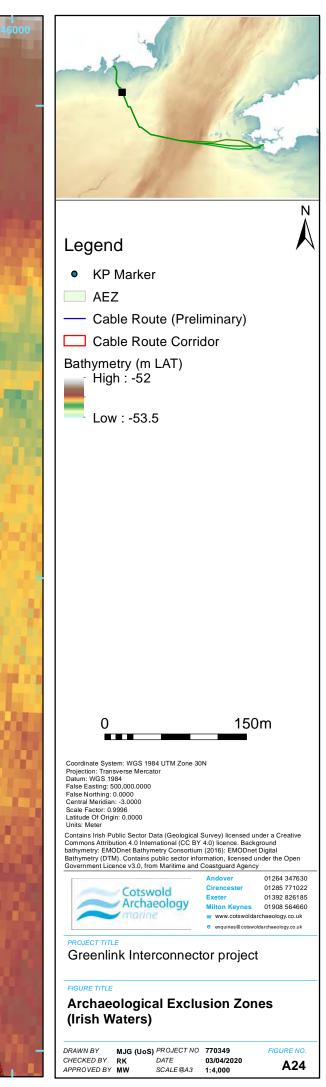


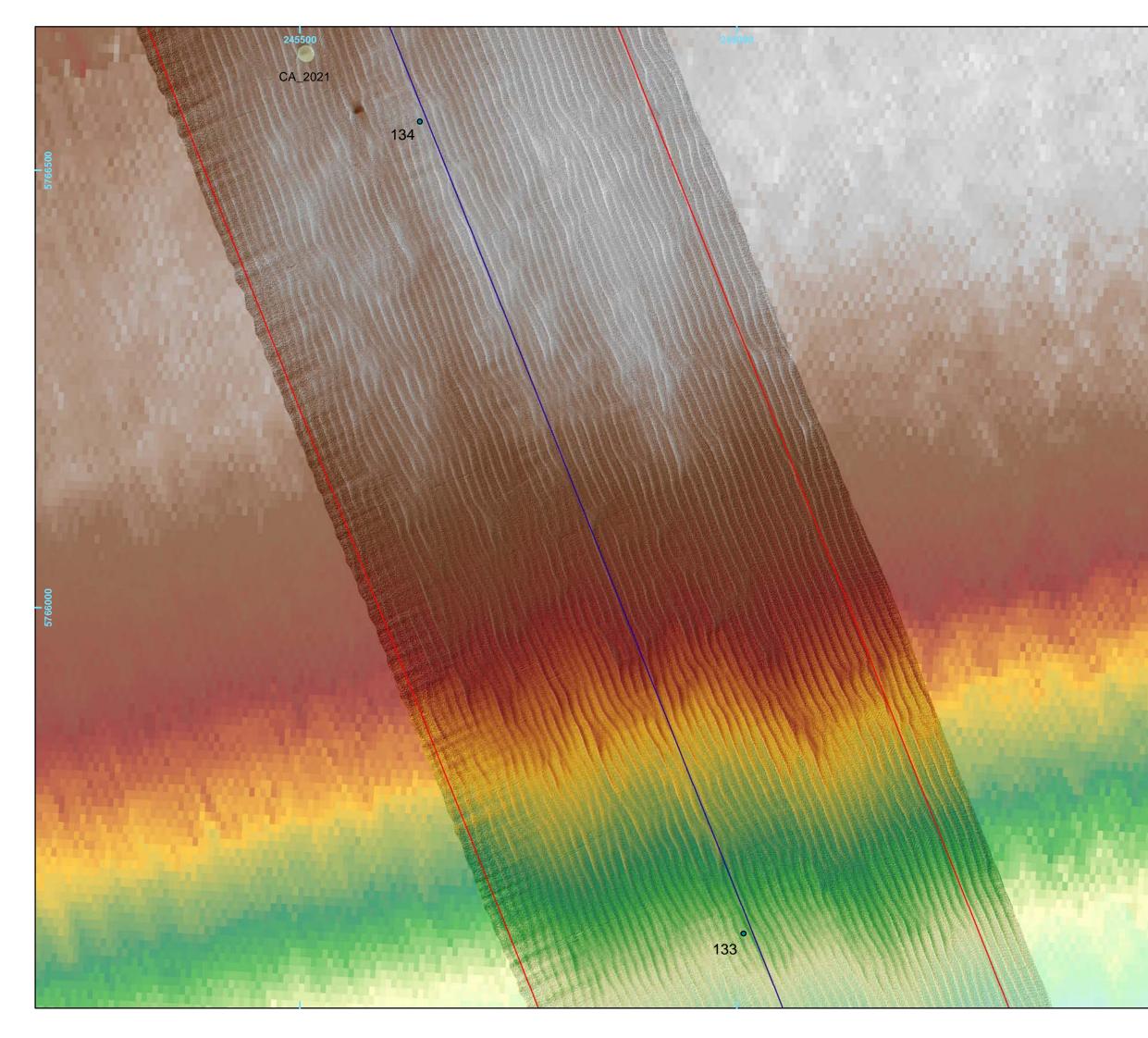


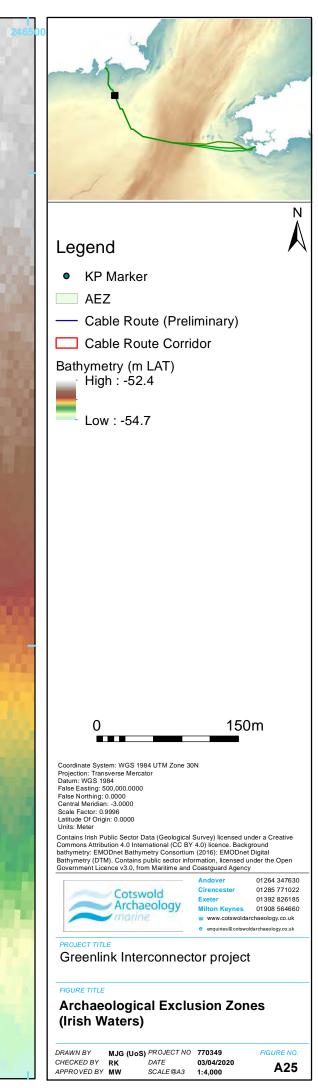


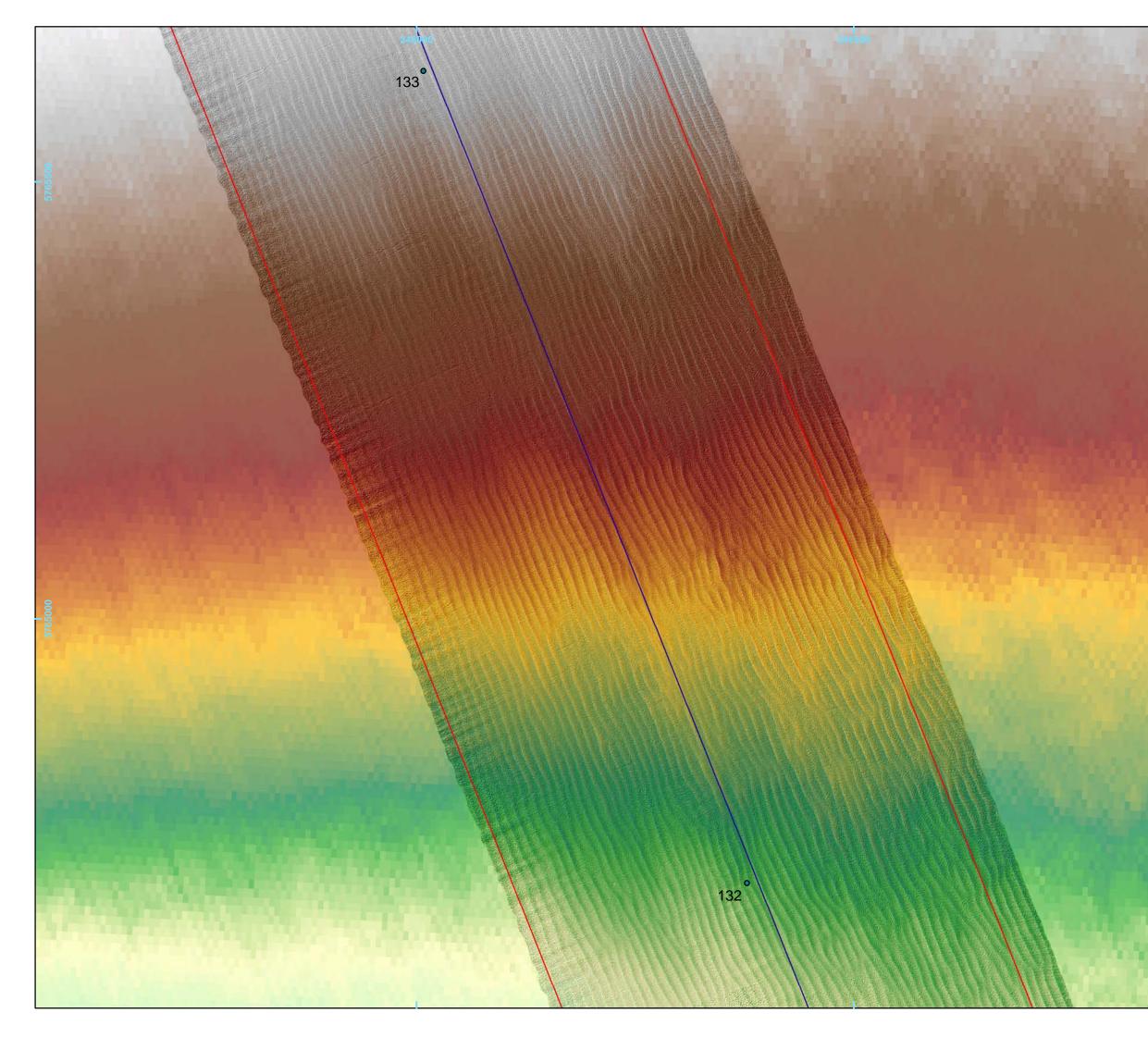


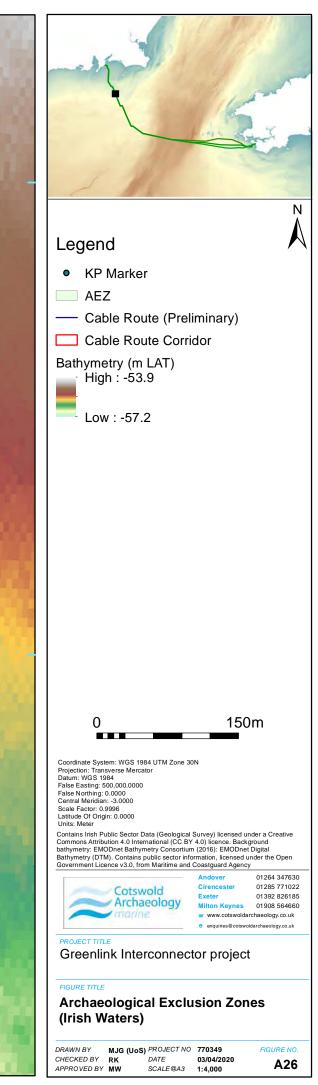


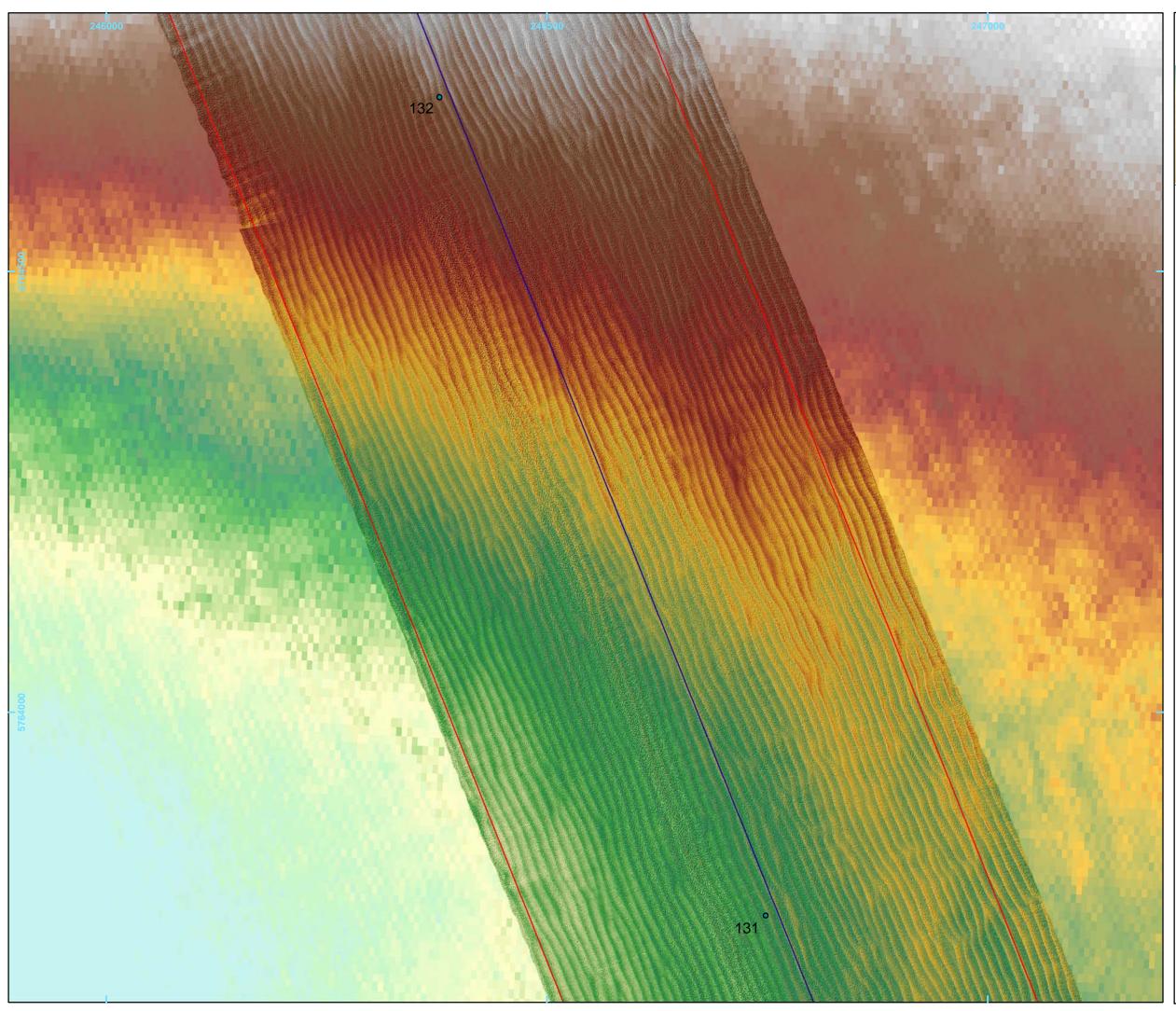












Legend • KP Marker AEZ — Cable Route (Pre Cable Route Corr Bathymetry (m LAT) High : -56 Low : -57.7	• •
O Coordinate System: WGS 1984 UTM Zone Projection: Transverse Mercator Datum: WGS 1984 False Easting: 500,000.0000 False Easting: 500,000.0000 Central Meridian: 3.0000 Scale Factor: 0.9996 Latitude Of Origin: 0.0000 Units: Meter Contains public Sector Data (Geologici Commons Attribution 4.0 International (CC E bathymetry: EMODnet Bathymetry Consortit Bathymetry (DTM). Contains public Sector in Government Licence v3.0, from Maritime an Cotswold Archaeology PROJECT TITLE Creenlink Interconned FIGURE TITLE Cordsponded FIGURE TITLE Contains Public Sector Data Contains Public Sector Data Cotswold Contains public Sector Data Cotswold Contains public Sector Data Cotswold Cotswold Contains public Sector Data Cotswold Cots	al Survey) licenesed under a Creative IY 4.0) licence. Background im (2016): EMODnet Digital formation, licensed under the Open d Coastguard Agency Andover 01264 347630 Cirencester 01392 826185 Milton Keynes 01908 564660 w www.cotswoldarchaeology.co.uk e enquiries@cotswoldarchaeology.co.uk

