Palaeolandscapes of Mòine Mhór Argyll and Bute

Year 1 Report

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Summary

The report contains the preliminary results of Year 1 of the palaeolandscape investigation of Mòine Mhór, Argyll. Coring was principally undertaken within the Mòine Mhór National Nature Reserve, and Dunadd Farm, on the west side of Dunadd, and on the north and south sides of the River Add.

Vibrocoring around Dunadd has recovered 6m sediment sequences that have penetrated the thick peat deposits which characterise the basin.

Beneath the peat, extensive units of blue clay were encountered (≤ +7m OD) in most of the coring locations suggesting a marine or estuarine depositional environment had developed in the eastern part of Mòine Mhór, close to Dunadd.

Diatom test samples from the blue clay unit indicate the preservation of several marine diatom species.

Radiocarbon dating of the uppermost part of the blue clay unit (+7m OD, southeast of Dunadd) indicate this 'marine' depositional environment was in place until at least 4700 cal BC.

These preliminary results indicate that Mòine Mhór was a markedly different landscape (or seascape) during the past, and with potential for greater understanding of the important archaeological records known in the area.

Further fieldwork and detailed geoarchaeological analysis of the recovered core material will carry on through year 2, in support of establishing a more robust chronology and depositional model for the basin. This palaeoenvironmental baseline can then be used to develop data-led palaeogeographic reconstructions of Mòine Mhór during the Holocene, and particularly during key archaeological periods from the late Mesolithic to early Medieval.

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The fieldwork was directed by Dr Andrew Bicket and Dr Matthieu Ghilardi, with the assistance of Ben Saunders. This report was written by Ben Saunders and Dr Andrew Bicket. The project was managed by Dr Andrew Bicket on behalf of Wessex Archaeology. Graphics were compiled by Ian Atkins. Diatom tests were performed by Dr Jonathan Lewis, Dept of Geography, Loughborough University.

Palaeolandscapes of Mòine Mhór, Argyll and Bute

Archaeological Borehole Survey

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was commissioned by Historic Environment Scotland to undertake an archaeological borehole survey of Mòine Mhór, the landscape surrounding the ancient site of Dunadd, in Kilmichael Glassary parish, Argyll and Bute, centred on NGR NR823930 (**Fig. 1**).

1.1.2 Mòine Mhór and the wider environs: Kilmartin Glen, Dunadd, River Add and Loch Crinan, comprise one of Scotland's richest archaeological landscapes. The sea and waterways are intrinsic but under-studied elements of all periods of archaeology here. This collaborative, international and multidisciplinary geoarchaeological project will investigate the Holocene record of palaeogeographic change

1.1.3 This project was an international collaboration between Wessex Archaeology (Scotland) and CEREGE (CNRS-Aix Marseille University) (http://www.cerege.fr/). The Project Directors were Dr Andrew Bicket and Dr Matthieu Ghilardi.

1.1.4 All works were undertaken in accordance with a Project Design which detailed the aims, methodologies and standards to be employed in order to undertake the evaluation (Wessex Archaeology 2017). This was agreed with Historic Environment Scotland, prior to the work taking place.

1.1.5 The survey comprised five vibrocore boreholes across the Mòine Mhór landscape, with plans for a further 10 hand cores using a Russian auger to confirm peat depths, although these proved unnecessary.

1.2 Scope of the report

1.2.1 The purpose of this Data Structure Report is to provide a detailed description of the results of the Year 1 geotechnical survey and initial assessment of the recovered cores, to interpret the results within a local, regional or wider archaeological context and assess whether the aims of the survey have been met.

1.2.2 An integrated geoarchaeological approach is well developed in European settings particularly the investigation of coastal, estuarine and fluvial change during the Holocene; especially in southern England, and across the Mediterranean in the context of important archaeological sites. The result is more effective research and management encompassing all elements that make archaeological sites important. In a Scottish setting these integrated approaches are rarely deployed.

1.2.3 A holistic, basin-scale investigation is required to create a geoarchaeological baseline within which to understand all periods of archaeology within the area, models of basin development and palaeolandscape reconstruction to underpin resources for future study and developing regional and national research frameworks.

1.3 Location, topography and geology

1.3.1 Mòine Mhór clearly preserves a complex suite of palaeochannels and landforms within the marsh (easily visible from Dunadd) which may suggest that previously the sea or estuary extended east near or abutting the outcrop at Dunadd (**Plate 1**). This would have major implications for understanding the site during Dál Riata, but requires empirical geotechnical and geoarchaeological data to confirm (stratigraphically, geochronologically and palaeoenvironmentally).

1.3.2 The area is also fringed by raised marine deposits, advances in relative sea level modelling and palaeogeographical research will also serve to enhance the understanding of the Mòine Mhór locality from earlier prehistory with known Mesolithic material in the area, and to what extent was the site an important ecotone of freshwater, estuarine and coastal environments (**Figure 1**).

1.3.3 Previous investigations have been targeted (e.g. GPR geophysical survey, e.g. Housley et al 2007; palaeoenvironmental analysis, Housley et al., 2010; palaeolandscape change at key locations Lathe and Smith 2015) and have highlighted the important palaeoenvironmental potential of the area and framework chronology for the later Holocene.

1.3.4 The Study Area focuses upon the Mòine Mhór National Nature Reserve, and may extend beyond if resources are identified to be of scientific interest. A range of environments exist including saltmarsh and woodland, but is dominated by the raised bog. The area is designated as a Special Area of Conservation (SAC), and, Site of Special Scientific Interest (SSSI) (Figure 1).

1.3.5 The Study Area is situated within a relatively flat area of land mostly within an elevation of approximately 10 m above Ordnance Datum (aOD). Local topography rises steeply on the south side between Ardnoc Point and Cnoc na Mòine, and on the east by Dunadd, and the slopes of Fiadhach Bhàrr. Fluvially, the NNR is fed predominantly by the River Add from the east, with smaller tributaries from the north and northeast.

1.3.6 The underlying bedrock geology throughout the Study Area is dominated by volcanic formations. The east of the NNR is underlain by Tayvallich Volcanic Formation, metamorphic igneous rocks. The west of the NNR is dominated by Dalradian Supergroup Metagabbro with smaller outcrops of Crinan Grit Formation quartzites. The higher ground to the south between Crinan and Cairnbaan is formed of Crinan Grit Formation, with Dalradian Supergroup intrusions.

1.3.7 Superficial geology is characterised as Pleistocene fluvio-glacial units in the River Add valley to the east, Devensian Raised Marine Deposits are extensive in the north, around Poltalloch (Figure 1). Seaward of these features, Raised Marine Deposits mapped as ‘Flandrian’ dominate the northern half of the NNR, with smaller examples on the southern flanks, along the route of the Crinan Canal.

1.3.8 Alluvium along the course of the River Add abuts the extensive Holocene peats, with saltmarsh and marine beach deposits at the mouth of the marine embayment at Crinan.

2 AIMS AND OBJECTIVES

2.1 General aims

2.1.1 As stated in the Project Design (Wessex Archaeology 2017) this project has been planned to take place over two seasons, and seeks to develop a basin-scale geoarchaeological baseline for the study area, and provide a basis for interdisciplinary training and knowledge transfer in Scottish archaeology. The overall aim is therefore to develop specific research themes across the Holocene, such as investigating:

- the historic palaeolandscape context of Dunadd within the context of Dál Riata;
- the prehistoric palaeogeography and implications for site preservation;
- the resilience of human societies to the changing landscapes;
- the vegetation changes in link with climate and anthropogenic forcing; and,
- the potential for enhancing future management of palaeolandscapes and cultural heritage resources preserved within them.

2.1.2 The results from the project will provide a palaeoenvironmental and cultural heritage baseline which will aid understanding of the potential of these resources and future management.

2.2 Research Questions

2.2.1 The specific Research Questions for Year 1 were focused on the big picture development of the study area:

- Where was the coast in relation to Dunadd during key periods of occupation?
- What was the configuration of coastal, intertidal, estuarine and fluvial environments during the key periods of archaeological activity in the Holocene?
- Does the changing palaeogeographic configuration of environments influence, react to, or develop in relation to human activity?

2.2.2 Primarily these questions were assessed through borehole log interpretation and deposit modelling and preliminary geochronology (targeted radiocarbon dating of key stratigraphic horizons).

2.2.3 Samples for future assessment were also taken and retained for future analysis.

3 METHODS

3.1 Introduction

3.1.1 All works were undertaken in accordance with the detailed methods set out within the Project Design (Wessex Archaeology 2017) and in general compliance with the standards outlined in CIfA guidance (CIfA 2014a). The methods employed are summarised below.

3.2 Fieldwork methods

General

3.2.1 The overall approach outlined below has been developed and tested at several fluvial and estuarine locations across Europe and is fully described in Bicket *et al* 2009; Ghilardi *et al* 2014; 2013; 2012. The approach involves a series of sampling locations set out in transects across the landscape, with at least one vibrocore sample taken from each transect, with the remaining locations being sampled through a Russian hand auger to create a general terrain model.

3.2.2 The vibrocoring was completed using a Eijkelkamp percussion drilling set with a petrol driven Cobra TT percussion hammer, which was capable of extracting 1m sections of cores down to a depth of 6m. Each 1m core was collected in a toughened clear plastic core tube which was set inside a steel corecatcher during the drilling. The ends of the filled core tube were covered with plastic capes and securely taped on, before the core was labelled up and set aside.

3.2.3 The borehole locations were recorded using GPS, set up for Post-Processing Kinematics (PPK) due to the poor satellite coverage within the area.

3.2.4 The original Project Design included a series of potential vibrocore or hand auger locations within six transects across the peat bogs, four to the south of the River Add and two to the north. The southernmost three transects contained three potential coring locations each, while the transect immediately south of Dunadd contained six potential locations. The northernmost transect contained four potential coring locations, while the remaining transect contained three. These locations proved very difficult to access without specialist all-terrain vehicles, which were unavailable to the field team.

3.2.5 The three southernmost transects and northernmost transect proved completely inaccessible and therefore were not sampled.

3.2.6 A 6m vibrocore (VC1) was recovered at the eastern end of the basin immediately south of Dunadd. The remainder of this transect proved poorly accessible, and an attempt at hand augering western end was unsuccessful, due to the heavily compact nature of sediments below the peat, a fault with the Russian auger and the extremely high water table, despite the timing of the project.

3.2.7 Following the granting of permission from the landowner of Dunadd Farm, two further vibrocores (VC2 and VC3) were taken immediately to the west of Dunadd to the south of the River Add, with the southernmost close to Location 3-3. These were located to give a realigned transect across the landscape, running roughly SW-NE when put in conjunction with the two previous vibrocore locations, as well as to assess whether there were marine sediments close to the foot of Dunadd.

3.2.8 A 6m vibrocore was also recovered near Drimvore to the north of the River Add.

3.2.9 A fifth vibrocore was taken closer to the Kilmartin Burn at Drimvore, which resulted in only a partial 1m core being recovered due to riverine deposits of large gravel and pebbles.

3.2.10 The locations of these vibrocore boreholes are presented on **Figure 1** and **Figure 2**.

Recording

3.2.11 A Leica GNSS, set up for Post-Processing Kinematics (PPK) due to the poor satellite coverage within the area was used to record the locations of each borehole. All survey data is recorded in OS National Grid coordinates and heights above OD (Newlyn), as defined by OSGM15 and OSTN15, with a three-dimensional accuracy of at least 50 mm.

3.2.12 A full photographic record was made using digital cameras equipped with an image sensor of not less than 10 megapixels. Digital images have been subject to managed quality control and curation processes, which has embedded appropriate metadata within the image and will ensure long term accessibility of the image set.

Artefactual and environmental strategies

3.2.13 Appropriate strategies for the recovery, processing and assessment of artefacts and environmental samples were in line with those detailed in the Project Design (Wessex Archaeology 2017). The treatment of artefacts and environmental remains was in general accordance with: *Guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b) and *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (Historic England 2011).

4 ENVIRONMENTAL EVIDENCE

4.1 Introduction

4.1.1 The recovered provide a good baseline picture of the underlying Quaternary sedimentary sequences preserved beneath the blanket peat across Mòine Mhór, particularly across the basin, immediately seaward of Dunadd (**Figure 2**).

4.2 Quaternary Stratigraphy

4.2.1 The coring logs illustrate the lower deposits on both sides of the current wedge of alluvial sediments deposited by the River Add during the Holocene (**Figure 3**). They illustrate the preservation of the underlying fine-grained, water-lain blue, clayey sediments currently obscured by the later Holocene hydroseral succession (infilling of the basin by expanding peat formation.

4.2.2 The blue clayey unit is encountered across the transect (VC1-4), and exhibits frequent bedding and lamination of fine-grained sediments in a low-energy environment. Organic and sandier lenses are encountered throughout the cored sequences providing opportunities for dating samples, and indicative of fluctuations and changes in the depositional environment.

4.2.3 In the central part of the transect (VC2-4), fluvial sediments of the River Add overlie the blue clayey unit. Typically, sandy, and gravelly-sand deposits which range from sorted to poorly-sorted.

4.2.4 VC5 probably indicates overbank deposits of the Kilmartin Burn, or possibly a very northly course of the River Add, and is characterised by very poorly sorted minerogenic sediment of sands, gravel and pebbles.

4.2.5 Overlying most of the transect (and Mòine Mhór as a whole) are thick peat deposits. Outwith areas of improved farmland, the peat is recorded to 4m thickness (VC1, VC4). Drainage and pastoral agricultural practices have reduced this to a fraction within farmed areas (VC2-3).

4.3 Selected cores

4.3.1 The sub-sampling from the vibrocores was completed on return to the Wessex Archaeology Scotland offices, through careful half-sectioning of selected cores. The lower cores of VC1, VC2 and VC4 all proved to contain sample-worthy deposits for dating and for diatom preservation tests.

4.3.2 As presented in the sample table in **Appendix 2**, the samples taken were as follows.

VC1

4.3.3 11 No. samples were taken from VC1; nine from the deepest core 1.6 and two from the second deepest core, 1.5. Four of the sub-samples were collected for diatom analysis (all from core 1.6), two for magnetic susceptibility, Loss-on-Ignition (LOI) and grain size tests (all from core 1.6) and five were collected for radiocarbon dating (three from core 1.6 and two from core 1.5). Both cores contained sediments suggesting either estuarine/lagoonal or marine sedimentation in the area of the core.

VC2

4.3.4 Three samples were taken from VC2; one from the deepest core 2.5 and two from the second deepest core 2.4. These were taken for radiocarbon dating from sediments suggesting marine sedimentation regimes.

VC4

4.3.5 Twelve samples were taken from VC4; all from the deepest core 4.6. One of these was from radiocarbon dating, one for tephra dating from a thin layer of probable tephra and nine for magnetic susceptibility, LOI and grain size tests.

4.4 ^{14}C samples

4.4.1 The results of the radiocarbon dating results are included in **Appendix 1**. Calibrated dates were recovered from 3 of the 8 samples. Small sample sizes and lack of good quality carbonised material limited the selection of dating samples. However, the current dates provide a valuable starting point for developing the geochronology.

4.4.2 The uppermost extent of the clay deposit in VC1, SE of Dunadd and illustrating the highest elevation of the blue clay deposit, has provided two good quality dates during the mid-Holocene. A further sample at the base of VC4 has provided a date during the peak of the last Ice Age.

4.4.3 Taken at face value the recovered sequences may provide palaeoenvironmental and palaeogeographical information on a broad section of the last 20,000 years.

4.4.4 The latter sample derives from moss leaves, and is a substantially old date. The stability of the depositional environment around this sample will be investigated by details sedimentological analysis, to judge whether the dated material is *in situ*.

4.5 Diatom assessment

4.5.1 The preliminary diatom assessment is surmised from the results table in **Appendix 2**. The prepared slides indicate there is diatom preservation within the various sandy to clayey deposits recovered in VC1. More thorough diatom extraction is required to assess the other cores for preservation potential.

4.5.2 VC1 has provided a range of important preliminary information on the depositional environment represented by the lower, blue clayey sequences. A range of marine diatom species are identifiable.

5 DISCUSSION

5.1 Palaeoenvironmental Potential

5.1.1 Preliminary results suggest that in the area of Mòine Mhór to the south of Dunadd, a 'marine' environment had developed and sediments accumulated within this environment until around 4700 cal. BC (**Figure 3**), during the later Mesolithic[1]. Subsequently, these marine clayey sediments were overlain by terrestrial, freshwater peats.

5.1.2 The elevation of this marine-terrestrial sedimentary change is +7m OD. These deposits, in addition to their palaeoenvironmental and archaeological potential, also represent good potential for preserving relative sea level markers, i.e. the time and elevation of past marine environments (Sea Level Index Points), or a less precise reference point. Both of which would provide valuable local and regional data for honing relative sea level models during the mid-Holocene and the key periods of later prehistory showcased in the region.

5.1.3 Diatoms are very sensitive environmental proxy species, with particular sensitivity to changes in salinity and coastal change. Detailed analysis may confirm the nature of the 'marine' environment highlighted by the initial tests. Was Mòine Mhór a sea loch, or perhaps more likely around Dunadd, a tidal estuary?

5.1.4 The current dating evidence suggest that some element of the marine blue clay deposits are coeval with the more widely investigated 'Clyde Beds', Late Pleistocene marine units underlying large areas of the lower Clyde valley and nearby at Lochgilphead (Peacock et al., 1977).

5.1.5 Subsequently the 'marine' sediments are overlain by peat (towards the margins of the basin), or fluvial sediments of the River Add (in the central part of the basin). It seems likely that the mouth of the River Add was landward of its current position, potentially *at or higher up the catchment than* Dunadd during the mid-Holocene highstand (VC1, +7m OD, c. 4700 BC).

5.1.6 The borehole transect (**Figure 3**) suggests the fluvial sediment wedge of the River Add may have removed the uppermost sections of the marine sequences as the River Add mouth developed seaward to its current position. This process is related to changing sea-level with the river channel developing as sea level relatively drops during the late Holocene.

5.1.7 At the same time as the river system was developing the margins of the basin unaffected by the fluvial sediment wedge were buried by peat formation, highlighting the long-term development of the basin from a marine to fluvial-terrestrial system during the Late Mesolithic, Neolithic onwards until today.

5.1.8 This dynamic environment means that for a given archaeological period in the basin, the configuration of marine, coastal, tidal, fluvial and terrestrial systems and processes is likely to be markedly different. Especially when we consider that the time between the Neolithic, Iron Age and early Medieval records in and around Dunadd are separated by millennia – more than enough time for the local geomorphology to have developed in sync with regional isostatic and environmental change, as well as global eustatic sea level, and, climatic change.

[1] http://www.scottishheritagehub.com/rarfa/palaeomeso (last accessed 28/03/2018).

5.1.9 Key palaeogeographical questions can now be honed for the basin in relation to specific archaeological periods.

Mesolithic

- During the Mesolithic, and the indicated highstand relative sea level, where was the coast?
- Where is the potential for encountering Mesolithic archaeology in Mòine Mhór?

Neolithic

- What was the environment of Mòine Mhór around the time of the Mesolithic-Neolithic transition in Argyll (c.4300-3900 BC)[2]
- When, and over what timescale did the early Holocene 'marine' environment of Mòine Mhór develop into a landscape dominated by peat formation and the River Add.

Iron Age

- During Iron Age Dunadd, what was the palaeogeographic configuration of Mòine Mhór?
- What implications may this have for the location/distribution, preservation and form of the wider archaeological record in Mòine Mhór?

Early Medieval

- What was the palaeogeographic configuration of Mòine Mhór associated with Dal Riata and Royal Dunadd?
- What was the 'maritime seascape/landscape' of Dunadd during Dal Riata?
- Was Dunadd directly connected to the marine environment?

5.2 Year 2 programme

5.2.1 The future work programme for Year 2 is presented in **Table 1**.

5.2.2 Further vibrocoring is planned within the NNR, especially the northernmost area around the car park/woodland footpath to establish the northern extent of the marine basin.

5.2.3 Priorities are given to further dating material, especially material underpinning inception dates for the formation of the peat at various locations across Mòine Mhór – as well as understanding the elevation and extent of the marine environment. These will provide a robust understanding of the seascape-landscape change across the basin during the Holocene.

5.2.4 Resources dependent it is hoped that an EM survey of the fields around Dunadd Farm, at the west and southeast side of Dunadd can be undertaken to identify underlying geomorphological features such as palaeochannels to hone the understanding of local

[2] http://www.scottishheritagehub.com/rarfa/earlyprehist

landscape during the changing periods – and potential for encountering archaeological material from waterlogged environments.

Table 1: Year 2 programme

Year	Dates	Duration	Activity
2018-2019	April – August	-	• Project Planning, • desk based assessment • Year 1 sample data analysis and reporting
	September	1 – 2 weeks	Second Fieldwork campaign: • Coring, • EM geophysical survey, • drone survey.
	October – March	6 months	Post-excavation phase • Multi-proxy data analysis • Interpretation
			Project reporting
2019 onwards	April -	-	Delivery of additional outreach and products

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APPENDICES

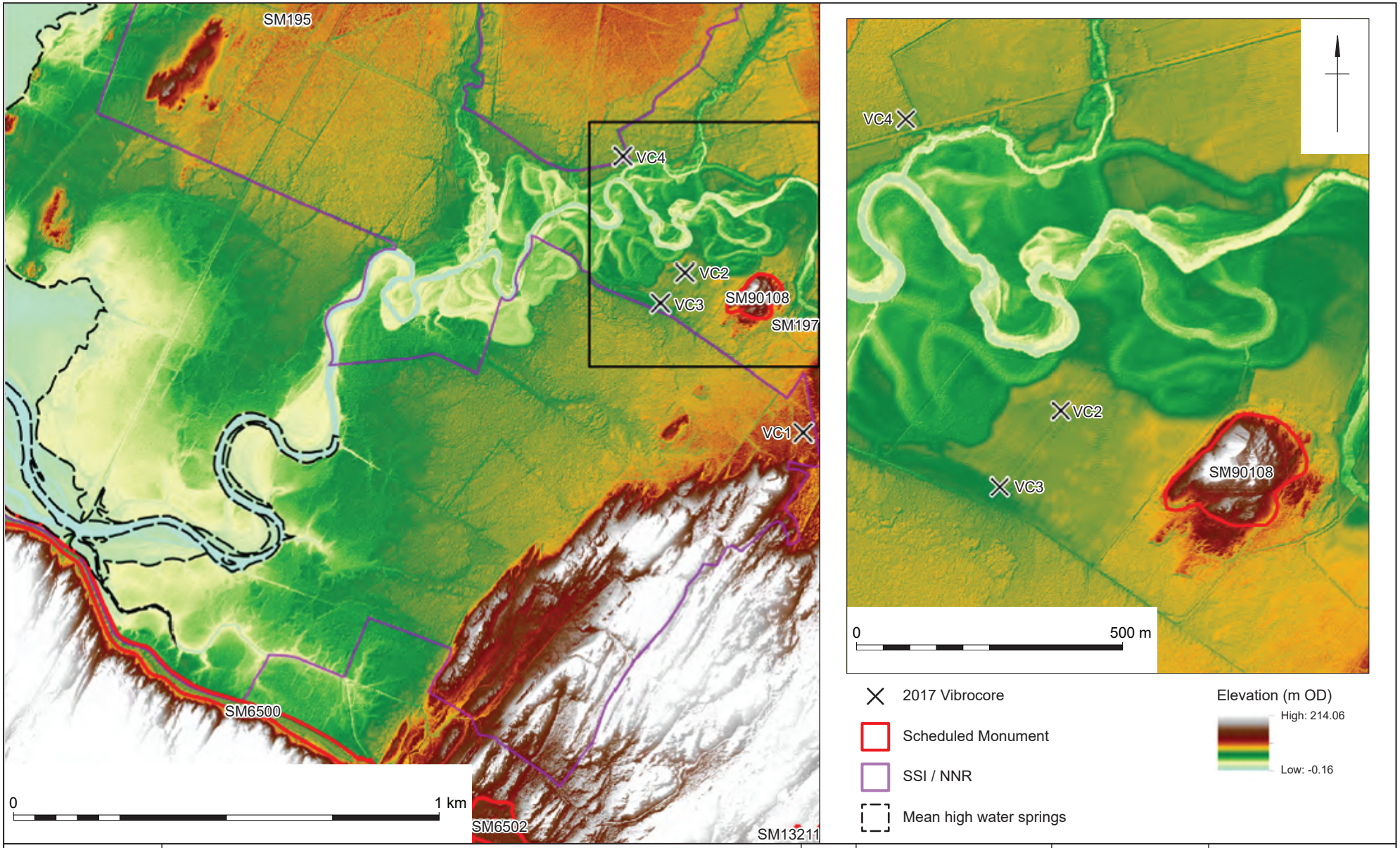
Appendix 1: Radiocarbon dating certificates

Appendix 2: Diatom report

Core/Sample	Sediments/macrofossils (following sieving)	Diatoms (quick prep.)
VC1-C6 5.73m	Silty-sand sediment (with some gravel) – lots of plant material. No forams/molluscs.	Diatoms present – countable, though preservation poor(ish) including breakage. Generally large marine (heavily silicified diatoms: *Auliscus sculptus*, *Paralia sulcata*, *Caloneis* sp. *Diploneis* sp., *Grammatophora* sp., *Biremis* sp.)
VC1-C6 5.87m	Peat? Lots of organic plant material. Silty clay fine sediment. No forams/molluscs	Diatoms present – countable, though preservation poor(ish). Generally large marine (heavily silicified diatoms: *Paralia sulcata*, *Caloneis* sp. *Diploneis* sp.)
VC1-C6 6.01m	Less OM/plant material than 5.87m (above sample). Fine-silty clay with some sand. No forams/molluscs.	Diatoms present – countable, preservation OK, though some dissolution/breakage. Generally large marine (heavily silicified diatoms: *Paralia sulcata*, *Caloneis* sp. *Diploneis* sp., *Tryblionella compressa*, *Lyrella* sp.)
VC1-C6 6.15m	Sandy/silty sediment – no forams/molluscs	No diatoms present (needs more thorough prep.)
VC2 C4 (3.88m)	Very fine sediment. Very little material sieved but nothing of note present. No forams/molluscs	No diatoms present (needs more thorough prep.)
VC4-C6 5.85m	Sandy sediment. No forams/molluscs. Macrofossils present	No diatoms present (needs more thorough prep.)
VC4-C6 5.93m	Sandy sediment. No forams/molluscs	No diatoms present (needs more thorough prep.)

Appendix 3: Environmental Samples tested in Year 1.

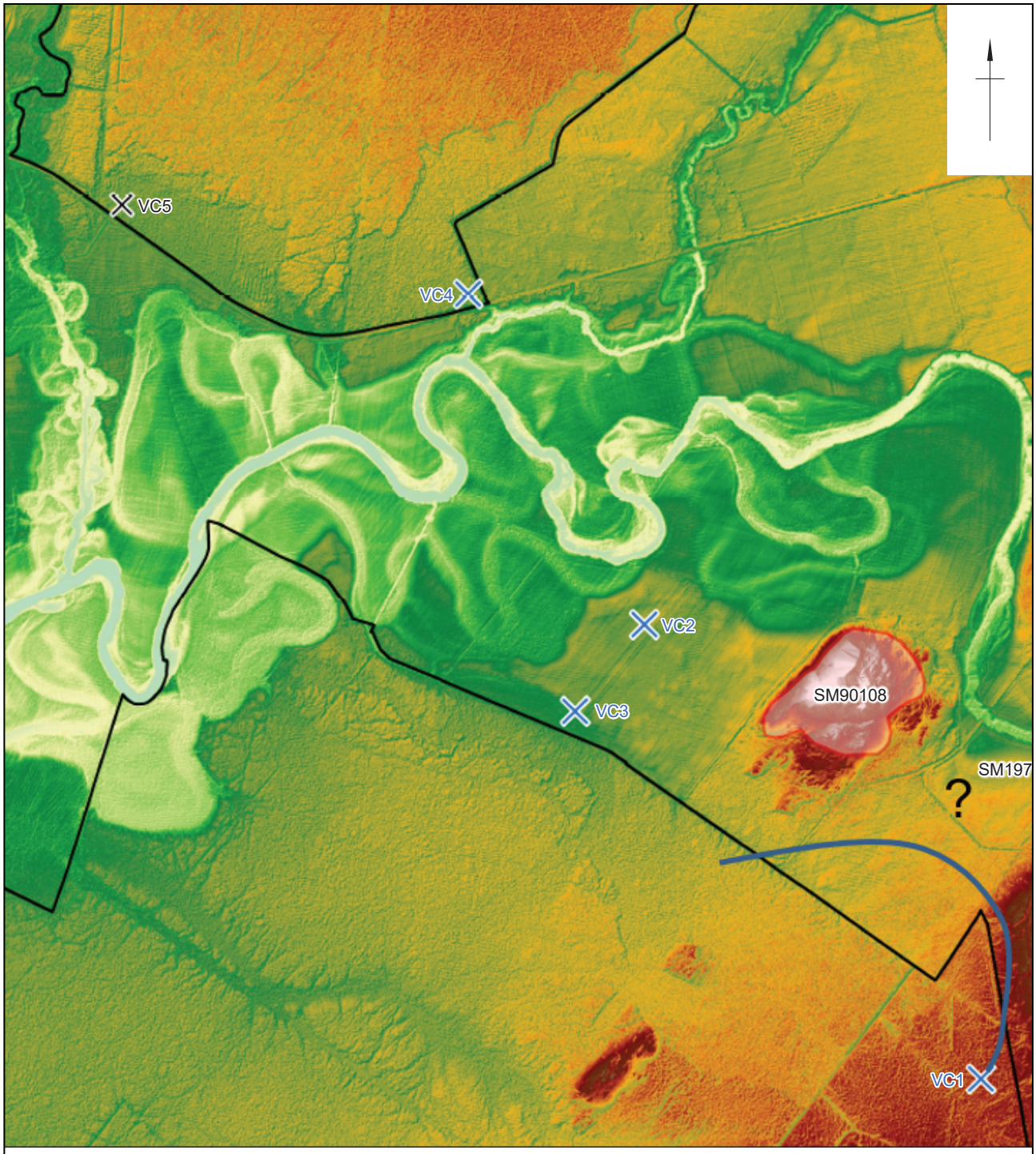
Sample	Vibrocore	Section	Purpose	Initials/date
001	1	6	radiocarbon dating	BJS 29/09/2017
002	1	6	Mag, LOI and Grain size	BJS 29/09/2017
003	1	6	Mag, LOI and Grain size	BJS 29/09/2017
004	4	6	Mag, LOI and Grain size	BJS 29/09/2017
005	4	6	Mag, LOI and Grain size	BJS 29/09/2017
006	4	6	Mag, LOI and Grain size	BJS 29/09/2017
007	4	6	Mag, LOI and Grain size	BJS 29/09/2017
008	4	6	Mag, LOI and Grain size	BJS 29/09/2017
009	4	6	Mag, LOI and Grain size	BJS 29/09/2017
010	4	6	Mag, LOI and Grain size	BJS 29/09/2017
011	4	6	Mag, LOI and Grain size	BJS 29/09/2017
012	4	6	Mag, LOI and Grain size	BJS 29/09/2017
013	4	6	Tephra dating	BJS 29/09/2017
014	4	6	Mag, LOI and Grain size	BJS 29/09/2017
015	4	6	radiocarbon dating	BJS 29/09/2017
016	1	6	radiocarbon dating	BJS 29/09/2017
017	1	6	radiocarbon dating	BJS 29/09/2017
018	1	6	Diatoms	BJS 29/09/2017
019	1	6	Diatoms	BJS 29/09/2017
020	1	6	Diatoms	BJS 29/09/2017
021	1	6	Diatoms	BJS 29/09/2017
022	1	5	radiocarbon dating	BJS 29/09/2017
023	1	5	radiocarbon dating	BJS 29/09/2017
024	2	4	radiocarbon dating	BJS 29/09/2017
025	2	4	radiocarbon dating	BJS 29/09/2017
026	2	5	radiocarbon dating	BJS 29/09/2017



Date:	29/03/2018	Revision Number:	0
Scale:	1:25000 and 1:10000 at A4	Illustrator:	IA
Path:	S:\PROJECTS\116240H\Graphics_Office\Rep figs\Landscape\2018_03_29		

Location of study area

Figure 1



2017 fluvial deposits below peat

2017 lagoonal deposits below peat

Scheduled Monument

SSI / NNR

Elevation (m OD)

High: 214.06

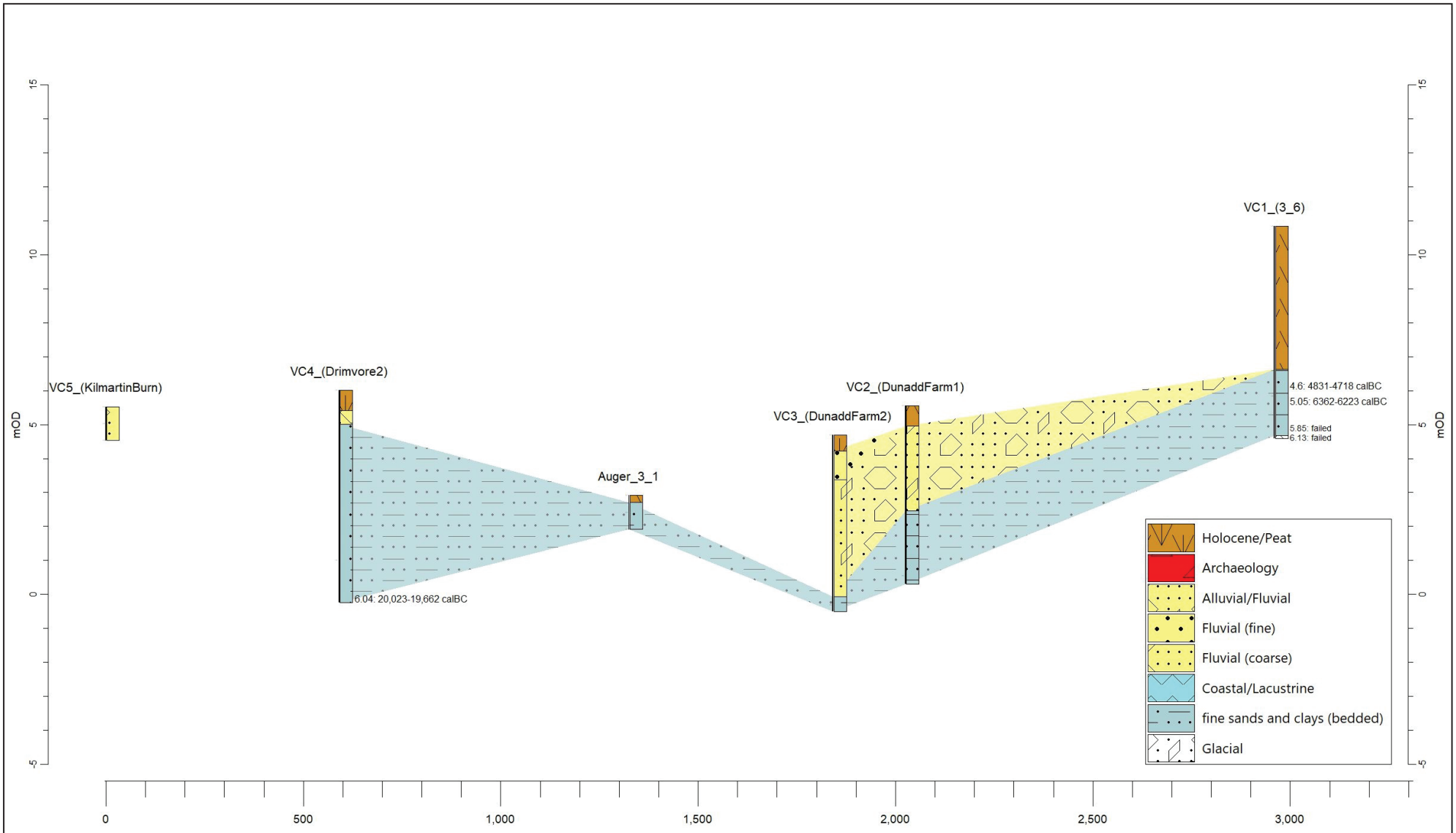
Low: -0.16

0 500 m

Date:	29/03/2018	Revision Number:	0
Scale:	1:10000 at A4	Illustrator:	IA
Path:	S:\PROJECTS\116240H\Graphics_Office\Rep figs\Landscape\2018_03_29		

Location of boreholes

Figure 2



Date:	29/03/2018	Revision Number:	0
Scale:	N/A	Illustrator:	IA
Path:	S:\PROJECTS\116240H\Graphics_Office\Rep figs\Landscape\2018_03_29		

Rockworks deposit model across the borehole transect

Figure 3

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