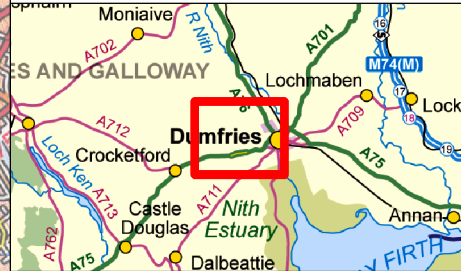


Legend:

- Proposed Pipeline Route
- 4km Area of Search
- SSSI
- Ancient Woodland

This map contains data from the following sources:-
 SNH website (20/02/2015 and 23/02/2015)
 Coordinate System: British National Grid
 Projection: Transverse Mercator
 Datum: OSGB 1936
 Units: Meter

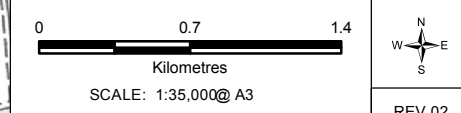


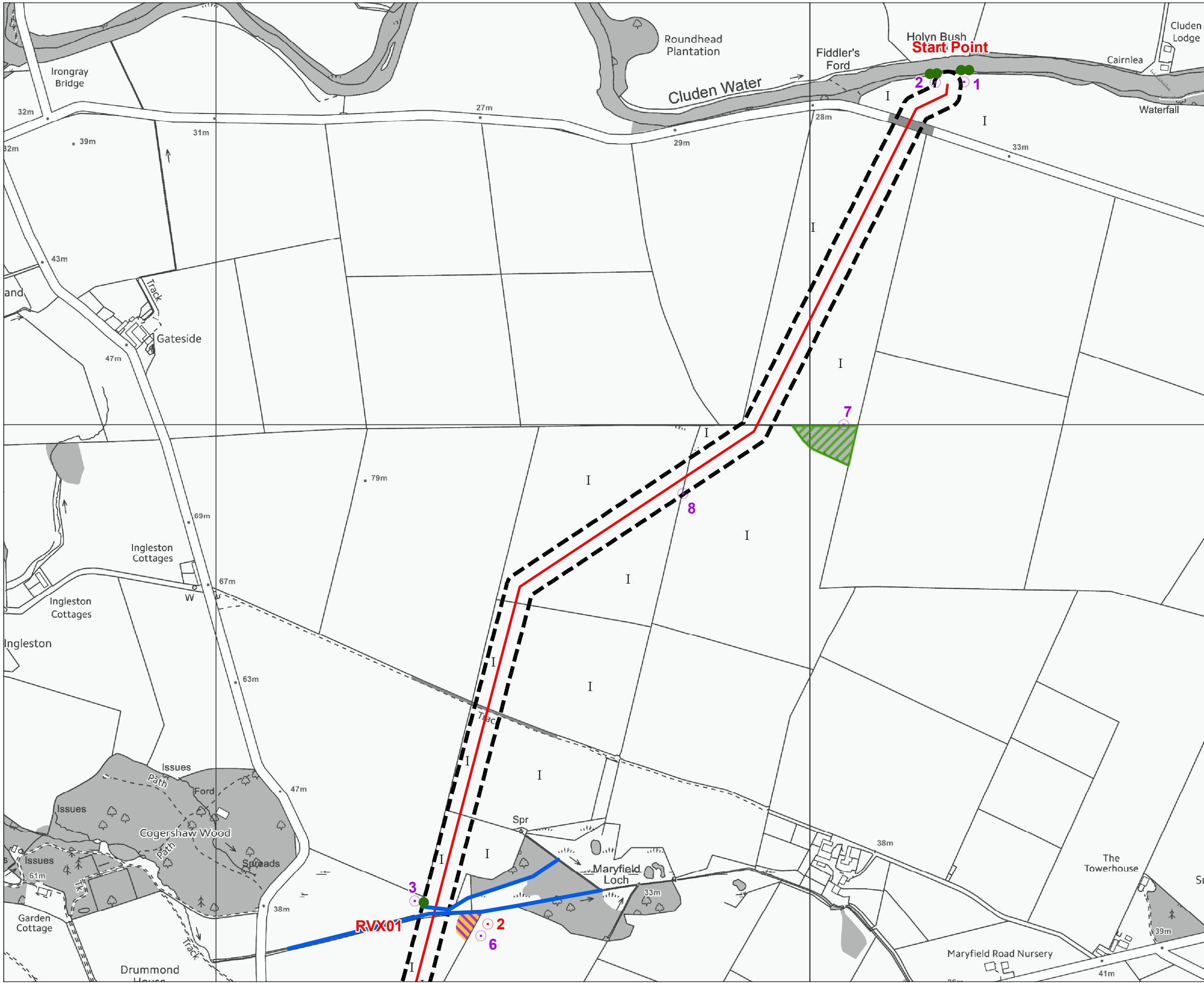
Rev	Date	Description	Drn	Chk	App
02	06/05/2015	Updated Route	FC	KS	RM
01	14/04/2015	Updated Logo	FC	KS	RM
00	02/03/2015	First Draft	FC	KS	RM

Cluden to Lochfoot Pipeline



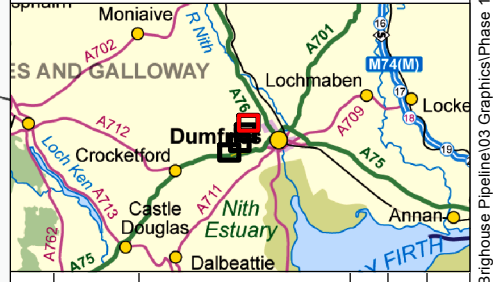
TITLE: Figure 7.1 - Ecological Designations





- Legend:**
- Proposed Pipeline Route
 - 45m Survey Area
 - I Improved Grassland
 - Tree
 - Running Water
 - Coniferous Plantation
 - Dense/Continuous Scrub
 - Hardstanding
 - Marsh/Marshy Grassland
 - Semi-Improved Grassland
 - Standing Water
 - Animal Target Note
 - Botanical Target Note

Coordinate System: British National Grid
 Projection: Transverse Mercator
 Datum: OSGB 1936
 Units: Meter

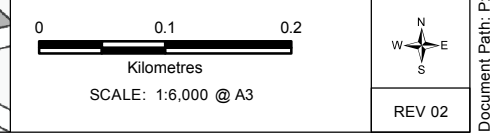


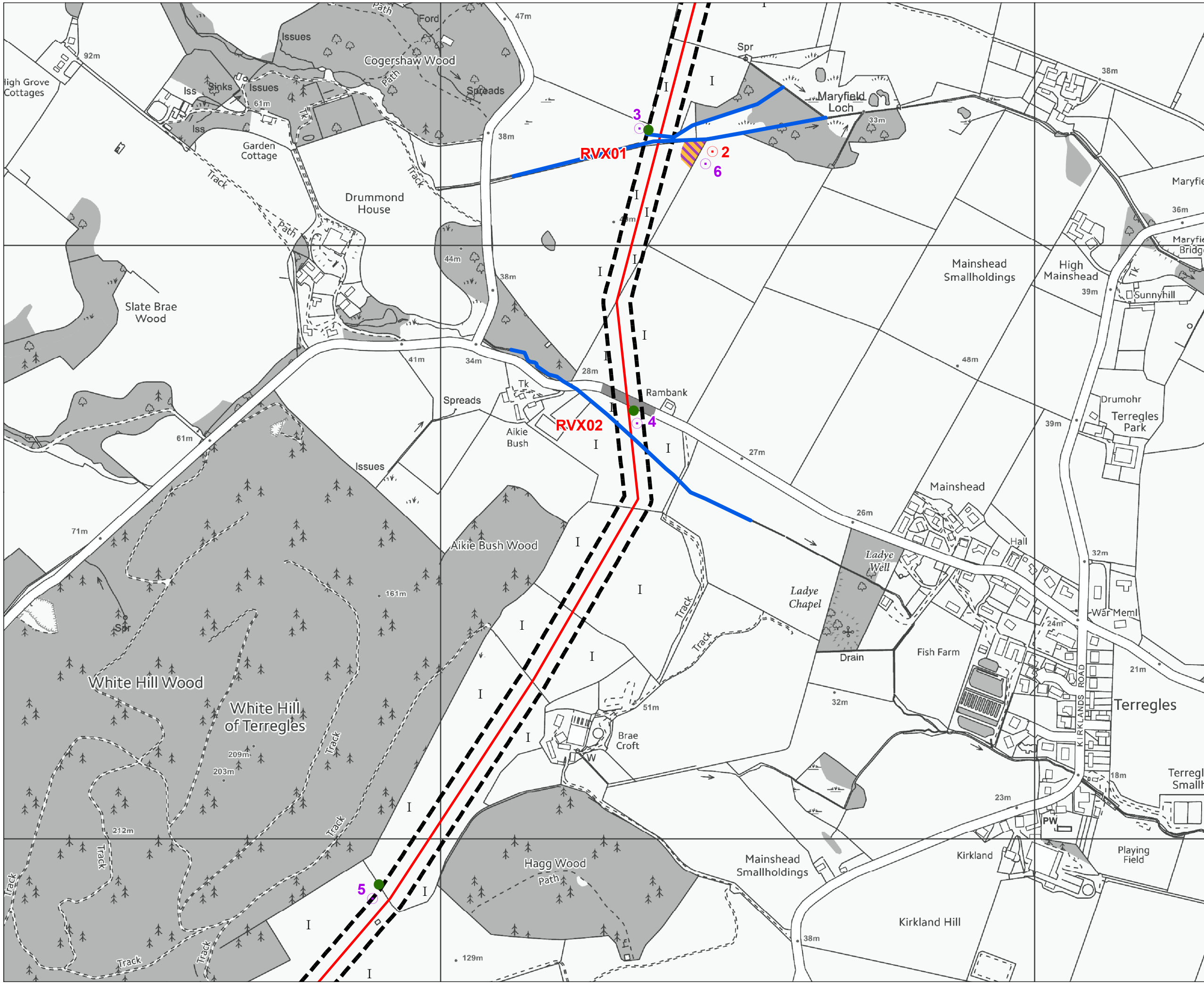
Rev	Date	Description	Drn	Chk	App
02	06/05/2015	Updated Route	FC	KS	RM
01	14/04/2015	Updated Logo	FC	KS	RM
00	19/03/2015	First Draft	FC	KS	RM

Cluden to Lochfoot Pipeline



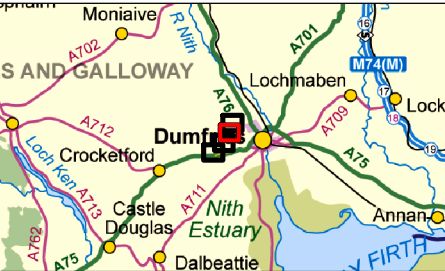
TITLE: Figure 7.2 - Phase 1
 Habitat Survey Plans
 Map 1 of 4





- Legend:**
- Proposed Pipeline Route
 - 45m Survey Area
 - I Improved Grassland
 - Tree
 - Running Water
 - Coniferous Plantation
 - Dense/Continuous Scrub
 - Hardstanding
 - Marsh/Marshy Grassland
 - Semi-Improved Grassland
 - Standing Water
 - Animal Target Note
 - Botanical Target Note

Coordinate System: British National Grid
 Projection: Transverse Mercator
 Datum: OSGB 1936
 Units: Meter

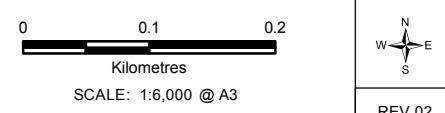


Rev	Date	Description	Drn	Chk	App
02	06/05/2015	Updated Route	FC	KS	RM
01	14/04/2015	Updated Logo	FC	KS	RM
00	19/03/2015	First Draft	FC	KS	RM

Cluden to Lochfoot Pipeline



TITLE: Figure 7.2 - Phase 1
 Habitat Survey Plans
 Map 2 of 4





- Legend:**
- Proposed Pipeline Route
 - 45m Survey Area
 - I Improved Grassland
 - Tree
 - Running Water
 - Coniferous Plantation
 - Dense/Continuous Scrub
 - Hardstanding
 - Marsh/Marshy Grassland
 - Semi-Improved Grassland
 - Standing Water
 - Animal Target Note
 - Botanical Target Note

Coordinate System: British National Grid
 Projection: Transverse Mercator
 Datum: OSGB 1936
 Units: Meter

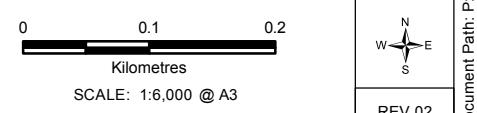


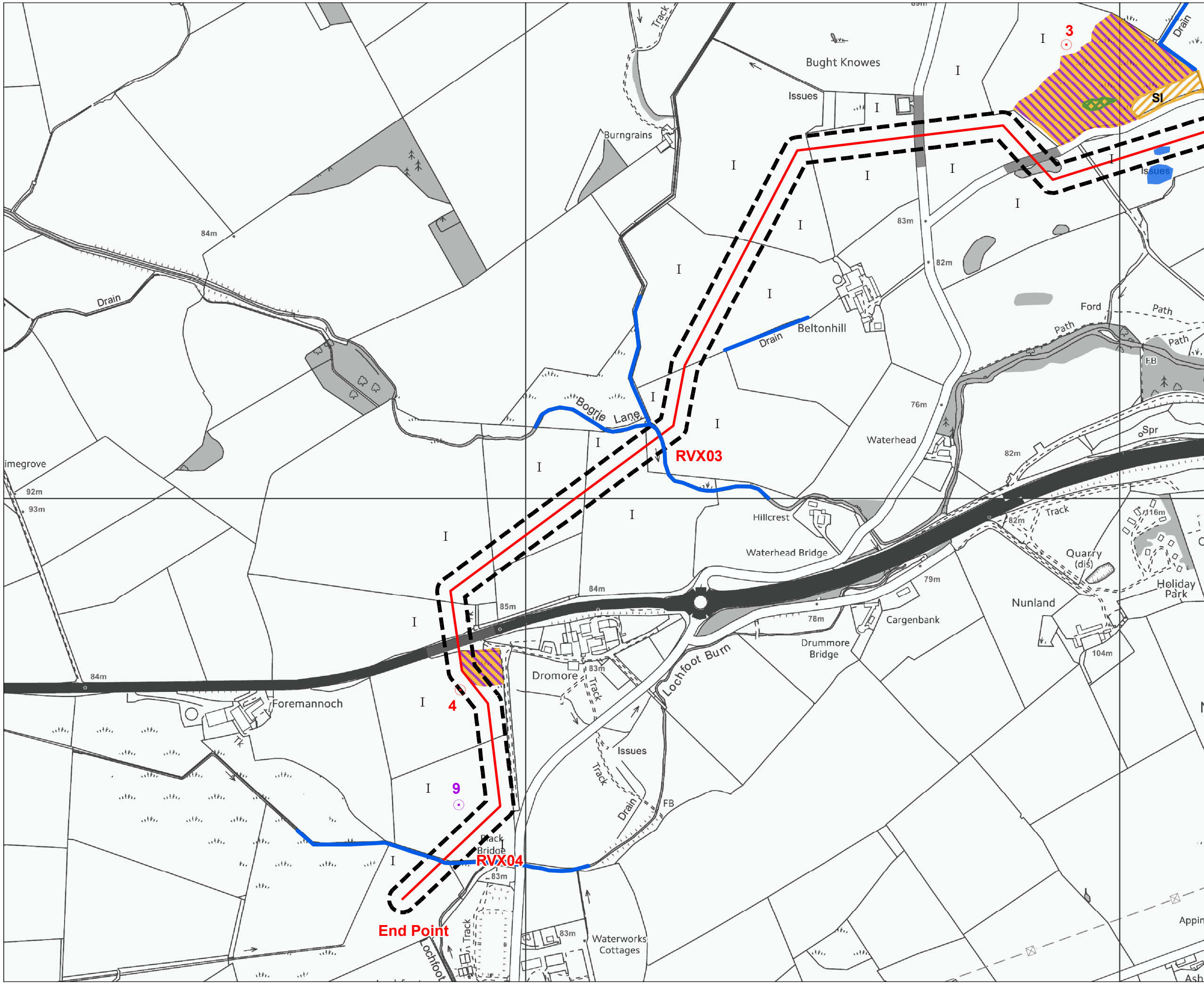
Rev	Date	Description	Drn	Chk	App
02	06/05/2015	Updated Route	FC	KS	RM
01	14/04/2015	Updated Logo	FC	KS	RM
00	19/03/2015	First Draft	FC	KS	RM

Cluden to Lochfoot Pipeline

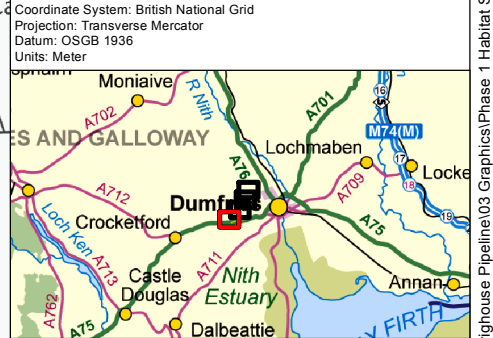


TITLE: Figure 7.2 - Phase 1
 Habitat Survey Plans
 Map 3 of 4





- Legend:**
- Proposed Pipeline Route
 - 45m Survey Area
 - I Improved Grassland
 - Tree
 - Running Water
 - Coniferous Plantation
 - Dense/Continuous Scrub
 - Hardstanding
 - Marsh/Marshy Grassland
 - Semi-Improved Grassland
 - Standing Water
 - Animal Target Note
 - Botanical Target Note

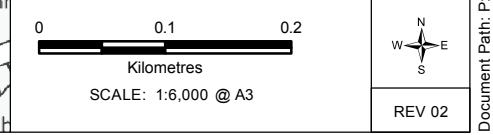


Rev	Date	Description	Drn	Chk	App
02	06/05/2015	Updated Route	FC	KS	RM
01	14/04/2015	Updated Logo	FC	KS	RM
00	19/03/2015	First Draft	FC	KS	RM

Cluden to Lochfoot Pipeline



TITLE: Figure 7.2 - Phase 1
 Habitat Survey Plans
 Map 4 of 4



8	ARCHAEOLOGY AND CULTURAL HERITAGE	8-1
8.1	Introduction	8-1
8.2	Consultation	8-1
8.3	Legislation and Policy Context	8-2
8.3.1	Key Legislation	8-2
8.3.2	Policy Guidance and Local Planning Policies	8-3
8.3.3	Professional Standards	8-4
8.4	Assessment Methodology and Uncertainty	8-4
8.4.1	Establishment of Baseline Environment	8-4
8.4.2	Identification and Assessment of Impacts and Mitigation Measures	8-5
8.4.3	Uncertainty and Technical Difficulties Encountered	8-7
8.5	Baseline Overview	8-8
8.5.1	Known Archaeological Resource	8-8
8.5.2	Archaeological Potential	8-10
8.6	Assessment of Impacts	8-13
8.6.1	Site-specific Impacts	8-13
8.6.2	Listed Buildings	8-13
8.6.3	Historic Landscape Impacts	8-13
8.7	Recommendations for Further Assessment	8-15
8.8	Mitigation Strategy	8-15
8.8.1	Approach	8-15
8.8.2	Pre-construction Mitigation	8-15
8.8.3	Mitigation During Construction	8-15
8.8.4	Off-easement Activities	8-16
8.8.5	Post-excavation	8-16
8.8.6	Archaeological Monitoring	8-16
8.9	Summary of Residual Impacts and Significance	8-16

Tables

Table 8-1 Archaeological Consultation Responses

Table 8-2 Key Legislation

Table 8-3 Policy Guidance & Local Planning Policies

Table 8-4 Sources used for the DBA

Table 8-5 Criteria Determining Magnitude of Development Impacts

Table 8-6 Criteria Determining Archaeological Sensitivity

Table 8-7 Significance of Impact

Table 8-8 Site Specific Impacts and Proposed Mitigation Measures

Table 8-9 Summary of Impacts and Mitigation Measures

Figures

Figure 8.1 Heritage Assets

8 ARCHAEOLOGY AND CULTURAL HERITAGE

8.1 Introduction

This section summarises the results of an archaeological desk-based assessment (DBA) and field reconnaissance survey (FRS) undertaken for The Project. The DBA and FRS were undertaken during August 2007. The baseline data has been subsequently reviewed and updated in 2015 to ensure that it is up to date.

Its aims are to collect available evidence from a number of sources, to assess the archaeological and historical potential of the pipeline corridor, and to assess the potential impact of the pipeline on the heritage resource.

The specific scope of this section is to:

- identify and define the known archaeological and heritage resources within the pipeline corridor;
- establish, from existing evidence, the likely archaeological potential of the pipeline corridor;
- provide an assessment of the importance of the known archaeological and heritage resources;
- assess the likely significant impacts of the pipeline on the known and potential archaeological resources; and
- make recommendations on the need for (and scope of) further evaluation and mitigation, as necessary.

8.2 Consultation

Table 8-1 summarises the consultation responses that have been received to date in relation to the archaeological assessment methodology presented in this section.

Table 8-1 Archaeological Consultation Responses

Consultee	Previous Consultation	Comment	Response to Consultation
Dumfries and Galloway Council	Meetings held on: 15.03.2007 03.07.2007 20.11.2007 24.11.2014 27.02.2015 Scoping Letter issued re Archaeology 17.02.2015	To minimise impact on archaeological sites	Impact will be minimised through micro-routing, early works and a watching brief during construction
Historic Scotland	Scoping Letter issued 17.02.2015	Potential impacts on the historic	Direct impacts avoided by design.

Consultee	Previous Consultation	Comment	Response to Consultation
		environment	Impacts on setting and heritage assets are likely to be of a limited duration as the pipeline is buried

8.3 Legislation and Policy Context

8.3.1 Key Legislation

The key legislation relevant to archaeology and cultural heritage is summarised in Table 8-2 below:

Table 8-2 Key Legislation

Act/Regulation	Jurisdiction	Key Relevant Provisions
<i>Ancient Monuments and Archaeological Areas Act 1979</i>	Historic Scotland/ Scottish Executive	It is a criminal offence to carry out any works on or near to a Scheduled Ancient Monument without Scheduled Monument Consent
<i>Town and Country Planning (Scotland) Act 1997; Planning Act (Scotland) 2008</i>	Scottish Executive/ Dumfries and Galloway Council	Establishes framework for determining planning applications, the role of the local planning authority and the role of Development (Structure and Local) Plans within the process
<i>Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997</i>	Scottish Executive/ Dumfries and Galloway Council	— provides for statutory protection of listed buildings and conservation areas. No works can be carried out in relation to a listed building without listed building consent. In conservation areas, designation introduces general controls to conserve their character and appearance
<i>Town and Country Planning (General Development Procedure) Scotland Order 1992, Section 15(1) (j) as amended by the Town and Country Planning (General Development Procedure) (Scotland) (Amendment (No2) Order 1994, Section (5)</i>	Scottish Government/ Aberdeenshire Council	Requires that, before granting planning permission for development, a planning authority shall consult with the Scottish Ministers for the following cases: development which may affect a historic garden or designed landscape; development which may affect the site of a Scheduled Monument or its setting, or may affect a category A listed building or its setting.
<i>Treasure Trove 'bona vacantia'</i>	Queen's and Lord Treasurer's Remembrancer (Q<R) / Scottish Executive	According to the historic Scottish Treasure Trove laws, all discoveries (whether precious metal or not) must be reported to the Q<R
<i>Protection of</i>	Ministry of	Outlines the criteria for designating a military

Act/Regulation	Jurisdiction	Key Relevant Provisions
<i>Military Remains Act 1986</i>	Defence	crash site. Certain activities are prohibited at protected sites, without the authority of the Ministry of Defence
<i>Scots Common Law</i>	Procurator Fiscal/ Police	The movement or disturbance of human remains without lawful authority is illegal. Any human remains should be reported to the local police or Procurator Fiscal's office. Further disturbance must cease until permission to continue has been granted by the legal authorities.

8.3.2 Policy Guidance and Local Planning Policies

Various documents also provide non-statutory protection for the historic environment in Scotland. These documents are outlined in Table 8-3 below.

Table 8-3 Policy Guidance & Local Planning Policies

Document	Jurisdiction	Key Issues
<i>Planning Advice Note (PAN) 2 / 2011 Planning and Archaeology (published July 27, 2011)</i>	Scottish Government	Provides local government officers with advice for treating archaeological sites through the planning process, including consideration of setting and preservation <i>in situ</i> . Sets out Government policy on how archaeological remains and discoveries are dealt with within the existing development plan and development control processes.
<i>PAN 71 Conservation Area Management</i>	Scottish Government	Provides local government and stakeholders with planning advice with regards to conservation areas.
<i>Scottish Historic Environment Policy (SHEP)</i>	Scottish Government	Defines the Historic Environment and Scottish Government Policy.
<i>Managing Change in the Historic Environment Guidance Notes</i>	Scottish Government/ Historic Scotland	Guidance to planning authorities and stakeholders regarding key issues relating to development, the planning process, and key issues pertaining to the historic environment. Most relevant are the guidance notes covering Setting (Oct 2010).
<i>The Treatment of Human Remains in Archaeology, Historic Scotland Operational Policy Paper 5, 1997</i>	Historic Scotland	Sets frameworks for dealing with human remains encountered during archaeological excavation, in accordance with Scots Law
<i>Dumfries and Galloway, Local Development Plan, September 2014</i>	Dumfries and Galloway Council	Contain policies specific to the protection and management of the historic environment, including archaeological and built heritage resources.
<i>Dumfries and Galloway, Local Development Plan, Technical Paper, Archaeologically Sensitive Areas (ASAs),</i>	Dumfries and Galloway Council	Supplementary guidance on the protection and management of Archaeologically Sensitive Areas (ASAs).

Document	Jurisdiction	Key Issues
September 2014		

8.3.3 Professional Standards

The DBA was prepared in accordance with the Chartered Institute for Archaeology's *Standard and Guidance for Historic Environment Desk-based Assessment* (2014). The FRS was undertaken in accordance with the Institute of Field Archaeologists' *Standard and Guidance for Archaeological Field Evaluation* (2014). The DBA and FRS were undertaken in accordance with the Chartered Institute for Archaeology's *Code of Conduct* (2014).

8.4 Assessment Methodology and Uncertainty

8.4.1 Establishment of Baseline Environment

8.4.1.1 Study Area

Baseline data was gathered for an area approximately 7.2km long by 1km wide (based on the centre line of the preliminary pipeline route). This corridor is referred to throughout this section as the 'pipeline corridor'. All sites recorded are included within the data analysis.

8.4.1.2 Desk-based Assessment

The DBA involved consultation of readily available archaeological and historical information from documentary and cartographic sources, and consultation with the relevant organisations. The sources used for the DBA are summarised in Table 8-4 below.

Table 8-4 Sources used for the DBA

Source	Data Obtained
Historic Scotland	List of SAMs List of buildings of Special Architectural or Historic Interest Register of Landscapes, Parks and Gardens of Special Historic Interest in Scotland
Dumfries and Galloway Council Historic Environment Record	GIS polygon data for areas of archaeological interest within the Pipeline corridor GIS point data for areas of archaeological interest which may form a planning constraint within the Pipeline corridor GIS polygon data for non-inventory Historic Gardens and Designed Landscapes (HGDLs)
Royal Commission on the Ancient and Historic Monuments of Scotland (RCAHMS)	National Monument Record (NMR) database of sites Vertical and oblique aerial photographic records Records of archaeological excavations in the Pipeline corridor

Source	Data Obtained
National Library for Scotland	NLS Map Library of maps for Scotland: Pont, T. 35(1) Nithsdale and Part of Teviotdale c.1583–c.1596 Blaeu, J. Atlas of Scotland 1654 Moll, H. Galloway : Contains The Shires of Wigton and Kirkcudbright 1745 Roy, W. Military Survey of Scotland 1747–1755 Ainslie, J. Stewartry of Kirkcudbright 1797 Thomson, J. Kirkcudbright-Shire 1821 British Geological Survey, Kirkcudbrightshire (Drift and Solid) Sheet 9E
Historic Ordnance Survey mapping	1 st and subsequent editions, 6 inches to 1 mile series, the Pipeline Corridor, produced by Landmark Information Group Ltd.

8.4.1.3 Field Reconnaissance Survey

The entire pipeline route was walked (apart from limited areas without landowner access permission), with a 50m-wide survey width, centred on the pipeline centreline. An individual recording sheet was completed for each field, containing information on observable archaeological features, present land use, evidence of previous land use, local topography, exposed geology, watercourses and health and safety considerations. Sketches and notes of observed archaeological features were included on the sheets. A total of 32 fields are crossed by the pipeline route.

8.4.2 Identification and Assessment of Impacts and Mitigation Measures

8.4.2.1 Gazetteer

A single gazetteer has been compiled for the pipeline corridor, using information from the DBA and FRS. The gazetteer includes a summary of the known archaeological resource within the pipeline corridor, identifies the importance of the known sites and the likely impact of the scheme on that resource and proposes site-specific mitigation measures. The gazetteer is included in Appendix E. Each site within the gazetteer has been allocated a unique reference number or ‘RSK ID’. This number is used to identify the site in the gazetteer, this section and on the archaeology maps (see Figure 8.1), which shows the location of the known archaeological and cultural heritage resources.

8.4.2.2 Magnitude of Change

The criteria in Table 8-5 below have been used to determine the magnitude of development impact on the heritage assets.

Table 8-5 Criteria Determining Magnitude of Development Impacts

Magnitude	Examples
Large	Complete destruction of the site or feature. Change to the site or feature resulting in a fundamental reduction in our ability to understand the resource and its historical context and setting.
Moderate	Change to the site or feature resulting in an appreciable reduction in our

Magnitude	Examples
	ability to understand the resource and its historical context and setting.
Small	Slight change to the site or feature resulting in a small reduction in our ability to understand the resource and its historical context and setting.
Negligible	No material change to the site or feature. No real reduction in our ability to understand the resource and its historical context and setting.
Uncertain	The extent or nature of the deposits is unknown, or construction techniques have not yet been determined.

8.4.2.3 Sensitivity of Receptor (Importance)

The criteria in Table 8-6 below have been used to assess the relative importance of the archaeological or cultural heritage resource. The sensitivity of sites was defined with reference to the Dumfries & Galloway Historic Environment Record and the desk-based assessment exercise. The criteria used incorporated the definition of sites as being of National, Regional/Local, Unknown or Other significance, in accordance with guidelines laid down in PAN 2/2011.

Table 8-6 Criteria Determining Archaeological Sensitivity

Receptor Sensitivity	NPPG5 Criteria	Examples
High	National	Internationally and nationally important resources such as: <ul style="list-style-type: none"> • Scheduled Ancient Monuments; and • Listed Buildings.
Medium	National Regional/Local	Sites likely to meet criteria for designation as Scheduled Ancient Monuments but without statutory protection. Sites that are significant and are of interest but do not meet the criteria for designation as Scheduled Ancient Monuments, such as: <ul style="list-style-type: none"> • burial sites; and • dense scatters of finds.
Low	Local	Sites which are locally significant, such as: <ul style="list-style-type: none"> • post-medieval field systems.
Negligible	None	Records that have been defined as not significant for planning purposes.
Unknown	Unknown Other	Resources of uncertain character, extent and/or date, such as: <ul style="list-style-type: none"> • single find spots; and • unidentified features on aerial photographs. Records or sites where a lack of information means that an assessment has not been made.

8.4.2.4 Significance of Impact

The significance of impact on the archaeological and cultural heritage resource has been determined by combining the magnitude of change with the relative importance of the resource (or receptor). Impact can be either:

- Direct

The physical damage to sites, whether recorded or as yet undiscovered: any direct impacts will be permanent and irreversible. It has been assumed that archaeological sites lying within 50m of the centreline of the pipe are the subjects of a direct impact; or

- indirect

This includes visual impacts on archaeological sites or features, impacts on the appreciation of the inter-relationships between sites, impacts on the relationship of a site to the wider landscape and impacts on significant views from and to sites. The project relates to a buried pipeline which, following reinstatement, will leave little above-ground trace. Any impacts on the setting of designated heritage assets would be temporary, reversible and limited to the duration of the construction phase of The Project. These are not significant, and, no further assessment of impacts on setting has been undertaken.

Other possible indirect impacts include preventing public access, or those caused by disturbance from vibration, drainage or other changes in hydrology. Archaeological sites lying 50m or more from the centreline of the pipe are considered not to be subject to any indirect impacts.

The criteria in Table 8-7 below have been used to determine the significance of impact.

Table 8-7 Significance of Impact

Magnitude of Impact		Resource Importance				
		<i>Very High</i>	<i>High</i>	<i>Medium</i>	<i>Low</i>	<i>Negligible</i>
	<i>Major</i>	Very Large	Very Large	Moderate	Slight	None
	<i>Moderate</i>	Very Large	Large	Moderate	Slight	None
	<i>Minor</i>	Large	Moderate	Slight	None	None
	<i>Negligible</i>	Moderate	Slight	None	None	None
	<i>No Change</i>	None	None	None	None	None

8.4.3 Uncertainty and Technical Difficulties Encountered

8.4.3.1 Reliability of Data

The following general limitations, common to all such studies, should be taken into account when considering DBA sources:

- HERs depend on opportunities for research, fieldwork and discovery. Data is collected only when these activities have occurred. Also, there can often be a lack of evidence for the date and extent of known sites;
- documentary sources are available only for the historic period, and many historic documents are inherently biased;

- primary sources, especially older records and some cartographic sources, can fail to accurately locate sites and can be subjective in any interpretation; and
- the usefulness of aerial photographs depends upon geology, land use and weather conditions when the photographs were taken. Some types of remains do not produce crop, soil or vegetation marks. Also, it is necessary for aerial photographs to be interpreted; this can involve some subjectivity regarding the nature of sites.

The following general limitations, common to all such studies, should be taken into account when considering FRS data:

- field conditions (such as uncut grass and recent new development) can render the surveys ineffective or impracticable. However, this was not a common or significant problem on this project as field conditions were generally favourable for field reconnaissance;
- due to the buried nature of archaeological sites FRS is unlikely to provide a complete picture of the nature and extent of any archaeology located.

8.4.3.2 Limitations of the Impact Assessment

The total extent of archaeological remains in Dumfries and Galloway is unknown, in common with all other areas of Scotland and the UK. Many sites will exist, including isolated sites, which have not been previously recorded or identified. It is expected that previously unrecorded archaeological sites will survive within the pipeline corridor. There is, therefore, an element of uncertainty over the nature, frequency and extent of the archaeological resource surviving within the pipeline corridor, which will be addressed in the recommendations for mitigation section below.

Additionally, due to the buried and invisible nature of archaeological sites, there is an element of uncertainty regarding the survival, condition, nature and extent of the previously recorded sites identified within the pipeline corridor. Grading of archaeological sensitivity and significance of impact may therefore be revised for known archaeological sites, following further assessment and evaluation.

However, the development of further assessment and mitigation strategies has taken the above points into consideration and the later phases of the staged approach will help cross-check and verify the impact assessments made.

8.5 Baseline Overview

8.5.1 Known Archaeological Resource

8.5.1.1 Sites of High Sensitivity.

There are two sites of high sensitivity identified within the 1km wide pipeline corridor. The Grove is an 18th to 19th century mansion house and is a listed building (RSKID 17). Drummore Farmhouse is an 18th century farmhouse which is also listed (RSKID 19).

8.5.1.2 Sites of Medium Sensitivity.

There are 21 sites of medium sensitivity within the pipeline corridor:

A Bronze Age burnt mound (RSKID 5). This was excavated during the construction of a previous pipeline. There have also been finds of a Bronze Age flat axe head (RSKID 45) and Whinstone perforated hammer stones (RSKID 46) within the pipeline corridor though the exact locations are not known.

Two sites have been identified of being of Iron Age date. These include an enclosure (RSKID 11) identified through aerial photography and a fort located on the summit of Beacon Hill (RSKID 10).

Two sites were identified as possibly dating from late prehistory. The earthwork of Mote Hill (RSKID 7) may date from any period from late prehistoric up to the eighteenth century. A post-built timber structure dating from between the late prehistoric up to the medieval period was also identified towards the southern extent of the proposed pipeline (RSKID 8).

A single site of possible Roman date was identified within the study area. A Roman fortlet has been identified at the southern extent of the proposed pipeline re-route (RSKID 6).

Two sites of probable medieval date have been identified close to the village of Mainshead. The Ladye Well and Ladye Chapel (RSKIDs 14 and 15) are thought to have been an ecclesiastical centre from the Middle Ages to at least the nineteenth century.

Six sites of post-medieval to modern origin were identified (RSKIDs 1, 2, 3, 4, 25, 28 and 55). These all represent structures that are likely to have been farmsteads or buildings associated with agricultural activity.

Four sites identified as being of medium sensitivity remain undated. Three sites are possible enclosures (RSKIDs 9, 13, 16), while RSKID 30 is a pair of small stone cairns, likely remaining from field clearance activities associated with agriculture.

8.5.1.3 *Sites of Low Sensitivity*

Twenty one sites were judged to be of low sensitivity within the pipeline corridor. Three boundary banks have been identified that date from the prehistoric to post-medieval period (RSKID 51, 52, & 53).

One site, a track, may date from between the medieval and modern eras (RSKID 31). An even ground surface noted during the FRS is probably the remains of a medieval to 18th century farmstead (RSKID 35). Beltonhill Farm is probably medieval in origin as it is shown on Bleau's 1654 map (RSKID 50).

Five sites are likely to date from the post-medieval period. RSKID 29 is a collapsed linear stone structure, likely to be an old drystone wall. A non-inventory Historic Garden/Designed Landscape (HGDL) known as the Grove (RSKID 33) and a track lined by hawthorns (RSKID 36) are of likely post-medieval to modern date. Akiebush farmstead is probably post-medieval in origin (RSKID 43). There is also the site of a quarry near Waterhead Bridge (RSKID 48).

Of likely modern origin are a group of four structures identified through aerial photography (RSKID 20).

Four sites of possible palaeo-environmental significance have been judged to be of low sensitivity. These include an area of peat deposits recorded by the British Geological

survey (RSKID 19), two waterlogged or poorly drained areas (RSKIDs 37 & 38) and a former watercourse (RSKID 22).

Five sites of unknown period have been judged to be of low sensitivity. Two are areas of uneven ground surface located during the field reconnaissance survey that may indicate buried archaeological deposits (RSKIDs 34 & 39). A mound was also noted during the FRS but may be natural (RSKID 40). Two find spots are also known of an iron spearhead (RSKID 41) and a flat axe head (RSKID 42). They are undated and their exact location is not known.

8.5.1.4 *Sites of Negligible Sensitivity*

Three sites were identified as being of negligible sensitivity. RSKID 24 was an area identified on early editions of the Ordnance Survey maps of the area as a gravel pit or quarry. Two areas were identified from aerial photographs as being possible palaeochannels for Cluden Water. However, the FRS indicated that the topography was unsuited for palaeochannels to be located in the area (RSKIDs 26 & 27).

8.5.1.5 *Sites of Unknown Sensitivity*

There are seven sites of unknown archaeological significance within the pipeline corridor. These include three possible archaeological sites identified as cropmarks (RSKIDs 12, 21 and 23) as well as one area of unusual bedrock outcrops and formation near Collochán Bank (RSKID 32). There are also two find spots recorded on the HER but there is no information about what they are or their date (RSKID 46 & 49). A road bridge is also included on the HER at Waterhead Bridge but its date is unknown (RSKID 47).

8.5.2 *Archaeological Potential*

8.5.2.1 *Palaeoenvironmental*

The palaeoenvironmental potential of the route includes areas where organic deposits may be preserved from past times which may shed light on early environmental conditions and land use. Such organic deposits are most likely to be preserved in areas of peat, such as RSKID 19, or waterlogged soils (RSK IDs 37 & 38).

Further areas of palaeoenvironmental potential may lie in waterlogged soils and former watercourses (such as RSKID 22). The likelihood of discovering further organic remains of palaeoenvironmental potential is considered to be moderate along the terraces lining watercourses, such as Lochfoot Burn, Cargen Water and Cluden Water.

8.5.2.2 *Palaeolithic*

So far, no sites confirmed as evidence for Palaeolithic occupation have been discovered in Scotland. The potential for the survival of Palaeolithic archaeology is considered to be negligible.

8.5.2.3 *Mesolithic*

The Mesolithic period represents the first confirmed occupation of Scotland by hunter-gatherer groups. Discoveries of Mesolithic material often take the form of flint scatters, and more substantial deposits of such material have been discovered in Dumfries and Galloway at Wigtown Bay.

It has been observed that archaeological remains dating from the Mesolithic in Scotland tend to be focused on the coasts, due to the available marine food resources and the lack of flint sources in Scotland except in the form of pebble beaches. An exemplary Mesolithic site was excavated at East Barns, East Lothian, on a raised beach in 2002.

Given that the pipeline passes through land-locked territory, the potential for the survival of Mesolithic archaeology is considered to be low.

8.5.2.4 *Neolithic*

No archaeological sites from the Neolithic have been recorded in the pipeline corridor.

The Neolithic period is best represented in the region by funerary monuments, such as the chambered tombs of the Bargrennan type in Galloway, although the funerary monument known as the Passage Grave is more typical of Nithsdale. The Neolithic to Bronze Age periods of Dumfries and Galloway are characterised also by the decorative cup and ring marked stones found in the region, which have parallels in Argyll and the Isle of Man.

Domestic structures dating from the Neolithic period typically take the form of timber-framed buildings, and it has been observed that the most densely settled areas in the region were focused on the coast.

“Spot” finds in the immediate area include axe hammers at Cormaddie, Blackpark and Holywood as well as a polished stone axe from Terregles.

The areas of pipeline passing close to Cluden Water and Cargen Water are considered to have the highest potential for the survival of Neolithic sites. The potential around these areas is considered to be moderate. Elsewhere along the pipeline corridor the potential for the survival of Neolithic sites is considered to be low.

8.5.2.5 *Bronze Age*

The Neolithic to Bronze Age transition in Scotland is marked by the introduction of new kinds of artefacts, monuments and burial traditions. Of particular note in the region are: the large stone circle known as the Twelve Apostles, north-west of Dumfries, and the Easthill stone circle close to Lochfoot. According to the NMRS, archaeological “spot finds” in the region also include a barb and tang arrowhead discovered at Culshan Farm.

There is one site of known late Neolithic to Bronze Age date in the pipeline corridor; a burnt mound at Collochán (RSKID 5). Burnt mounds tend to be focused on or close to a water source, so any such areas along the Pipeline corridor must be considered to have a high potential for the survival of burnt mounds. The pipeline is therefore considered to have a low to moderate potential for the identification of Bronze Age archaeology along its entire corridor.

8.5.2.6 *Iron Age*

There are two archaeological sites dating from the Iron Age within the pipeline corridor. These include the hillfort of Beacon Hill (RSKID 10) and the enclosure of Fiddlers Ford (RSKID 11). Some of the other areas identified as possible enclosures may also date to this period. In the wider area, there is the crannog on Lochrutton Loch, which is also thought to date from the Iron Age, as well as other fortified hilltop settlements in the vicinity.

Given the proximity of the proposed pipeline route to the Beacon Hill hillfort, there is a moderate potential for the existence of currently unrecorded features of this period.

8.5.2.7 *Roman*

A single site has been identified as Roman within the pipeline corridor. This is the fortlet at Mote of Lochrutton (RSKID 6). Roman remains in Dumfries and Galloway most frequently take the form of military installations and infrastructure, such as roads, forts and marching camps. These include possible marching camps at Shawhead as well as the fort of Dalswinton in Nithsdale and the Dalswinton to Glenlochar Road. This Roman road could have passed either side of White Hill of Terregles. The two areas of potential where this road might have crossed the route of the pipeline are shown on Figure 8.1.

Given the relatively sparse nature of the Roman remains in the study area and that the pipeline route might cross the line of a Roman road, the potential for the survival of Roman remains is considered to be moderate.

8.5.2.8 *Early Medieval and Medieval*

Two sites of known or suspected medieval origin lie within the pipeline corridor. These are the Ladye Chapel and the Ladye Well near Mainhead (RSKIDs 15 & 14). Farmsteads at Brockholes (RSKID 35) and Beltonhill Farm (RSKID 50) show up on early mapping suggesting they are medieval in origin. In addition, the DBA revealed that the place names of Mill of Cluden, Terregles, Bonerick, Riddings, Aikie Bush, Beltonhill, Collochlan, Drumore, Gateside and Nunland were already in use by 1583-1596. This suggests that these places have an occupational history that extends back into the medieval period. A track located during the FRS may also be medieval in origin (RSKID 31).

Analysis of the surrounding area has revealed that early medieval and medieval elements of occupation are apparent in the form of buildings, field systems, churches, and agricultural structures such as corn-drying kilns. Relatively few castles are found in the vicinity, with Drumcoltran Tower representing the closest notable example.

Given that the pipeline route is predominantly under pasture, and therefore relatively undisturbed by modern agricultural practice, there is a moderate to high potential for encountering agricultural features of medieval origin throughout the pipeline corridor. The potential for identifying medieval remains associated with settlement activity is considered to be particularly high within the proximity of known Medieval settlements such as those mentioned above.

8.5.2.9 *Post-medieval*

There are nine sites of Post-medieval date within the pipeline corridor. Six of these sites are buildings or former buildings, probably farmsteads. One appears as a set of outbuildings on an aerial photograph, and two quarries were also identified during the assessment. A collapsed linear stone structure (probably a drystone wall), two small stone cairns and two tracks are likely to originate from this period also.

From the DBA it is apparent that Post Medieval arable agriculture was focused on the more fertile, free draining soils around the rivers and streams along the pipeline corridor. These areas were the first foci for enclosure during the eighteenth century, if maps of the period can be relied on in this regard.

The potential for the identification of remains associated with the post medieval agricultural use of the pipeline route is therefore considered to be high, however, any such remains are likely to be of low archaeological sensitivity.

8.6 Assessment of Impacts

8.6.1 *Site-specific Impacts*

The following pipeline construction activities have the potential to impact on archaeological and cultural heritage remains:

- preparation of the working width, particularly temporary fencing and the creation of drainage runs;
- topsoil stripping, including the creation of access points and temporary compounds, as well as the strip for the pipeline working width;
- benching of areas of side slope;
- excavation of the pipe trench, including any launch or reception pits for non-open cut crossings; and
- reinstatement of the working width, particularly ripping of subsoil during reinstatement.

Taking regard of these construction activities, the potential impact of the pipeline has been assessed on a site-by-site basis using the criteria identified in Section 8.4 above. Of the 54 sites identified by the DBA and FRS within the pipeline corridor, 43 are considered to be too far from the route for any significant impact to take place. Table 8.8 identifies the significance of impact on the remaining 8 sites.

Where a pre-construction survey has been identified in the ‘Proposed Mitigation/Assessment Measures’ identified below, one or more of the non-intrusive or intrusive assessment techniques identified in Section 8.8 below will be applied, as appropriate and in stages, forming a suitable mitigation strategy. The mitigation strategy has been agreed in consultation with the archaeological advisor to Dumfries & Galloway council, as detailed below.

8.6.2 *Listed Buildings*

An initial assessment of Listed Buildings within the pipeline corridor has been undertaken. There are two listed buildings within the pipeline corridor (RSKID 17 & 18). The construction of a buried cross-country pipeline will not have any direct or residual impact on listed buildings; all statutory protected sites have been avoided by the preferred route option.

8.6.3 *Historic Landscape Impacts*

During construction, the pipeline will impact on extant features of the historic landscape, such as field boundaries, ponds and quarries. The physical impact on such features will be *Small* to *Negligible* and temporary. Appropriate mitigation of this impact will be included during the watching brief (see Section 8.8 below).

Table 8-8 Site Specific Impacts and Proposed Mitigation Measures

RSK No.	Description	Period	Site Name	Category of Importance	Impact	Significance of Impact	Proposed Mitigation/Assessment Measures
22	Watercourse marked on 1 st ed. OS, drained by 1956 Not visible during FRS	Unknown	N/A	Low	Small	Minor	Record during watching brief during construction
25	Farmstead. Structures marked on 1 st Edition OS. Visible as large platform and bank during FRS	Post-medieval to Modern	Carsewell	Medium	Moderate	Moderate	Record during watching brief during construction
29	Collapsed stone linear structure (drystone wall?) located during FRS	Post-medieval	N/A	Low	Small	Minor	Record during watching brief during construction
30	2 small cairns located during FRS	Unknown	N/A	Medium	Small	Minor	Record during watching brief during construction
31	Track located during FRS	Medieval to Modern	N/A	Low	Small	Minor	Record during watching brief during construction
32	Bedrock outcrops located during FRS	Unknown	Collochan Bank	Unknown	Large	Moderate	Record during watching brief during construction
34	Uneven ground surface noted during FRS	Unknown	N/A	Low	Moderate	Minor	Record during watching brief during construction
39	Uneven ground surface noted during FRS- ridge and furrow	Unknown	N/A	Low	Large	Moderate	Preconstruction survey - Earthwork topographic survey and subsequent watching brief recording during construction

8.7 Recommendations for Further Assessment

The pipeline route has been designed to avoid statutory protected sites, and many of the known archaeological sites. However, unavoidable impacts and impacts on potential remains will accommodate within the general mitigation strategy, as described in Section 8.8. In consultation with the Dumfries & Galloway County Archaeologist, no additional assessment prior to construction of the proposed pipeline route is required.

8.8 Mitigation Strategy

8.8.1 Approach

An archaeological mitigation strategy has been developed for all known archaeological sites impacted on by the pipeline. The mitigation strategy includes consideration of the following principles:

Preservation in situ

- Where possible, unavoidable impacts on known sites will be minimised by re-routing, reduction of the working width, the laying of geotextile matting or bog mats and/or careful reinstatement procedures, e.g. avoidance of sub-soil ripping in archaeologically sensitive areas; and

Archaeological excavation (preservation by record)

- Unavoidable archaeological remains identified within the working width, which cannot be preserved in situ, will be archaeologically excavated and recorded in advance of construction.

The mitigation strategy has been prepared in consultation with Dumfries & Galloway Council, County Archaeologist. The proposed mitigation to deal with the assessed impacts (see Table 8.7 above) before and during construction is set out below.

8.8.2 Pre-construction Mitigation

8.8.2.1 Pre-construction Survey

Prior to construction an earthwork survey will be carried out to make a record of the form and extent of potential earthworks noted as uneven ground during the FRS at site RSKID 39. This may be integrated into topographic survey work planned for the wider scheme.

8.8.3 Mitigation During Construction

8.8.3.1 Archaeological Watching Brief

A general archaeological watching brief will be carried out during construction to deal with any unanticipated archaeological remains encountered during topsoil stripping, benching and/or pipeline trenching.

Specific attention will be paid to the recording of the following sites during the watching brief:-

- RSKID 22 – A watercourse marked on first edition OS mapping.
- RSKID 25 – Remains of a farmstead visible as a large platform and bank during the FRS
- RSKID 29 – A collapsed linear stone wall located during the FRS.
- RSKID 30 – Two small cairns located during the FRS
- RSKID 31 – Track located during FRS
- RSKID 32 – A bedrock outcrop to be inspected for archaeological evidence.
- RSKID 34 – An uneven ground surface noted during the FRS
- RSKID 39 – An uneven ground surface noted during the FRS.

The impact on any significant archaeological remains encountered during the watching brief will be minimised where possible by reduction of the working width to a minimum practical level, the placement of geotextile matting or bog mats and/or careful reinstatement (e.g. avoidance of ripping). Archaeological remains which cannot be preserved in situ will be archaeologically excavated and recorded, as appropriate. A method statement will be provided to Dumfries and Galloway Council detailing the methodology of the watching brief in advance of the works, to be approved by the local authority archaeologist.

8.8.4 Off-easement Activities

Any off easement activities (e.g. activities associated with the pipeline construction with the potential to impact on cultural heritage resources out with the pipeline working width, such as temporary access roads) will be checked against the cultural heritage baseline data. Where possible these will be located to avoid known sites. If a known site cannot be avoided further archaeological assessment and mitigation will be undertaken in consultation with the Dumfries and Galloway County Archaeologist.

8.8.5 Post-excavation

On completion of any archaeological fieldwork associated with the pre-construction mitigation, during construction site-specific mitigation, the construction watching brief or work associated with off easement activities a phased programme of post-excavation assessment, analysis, reporting and publication will be implemented, as necessary. This will need to be agreed with the Dumfries and Galloway County Archaeologist. Any findings shall be recorded and distributed to interested parties.

8.8.6 Archaeological Monitoring

All site-specific and general mitigation strategies have been prepared in consultation with Dumfries & Galloway Council. The Council Archaeologist will be invited to monitor all archaeological work in the field (pre- and during construction). The scope of any necessary post-excavation work will be agreed in consultation with the Council

8.9 Summary of Residual Impacts and Significance

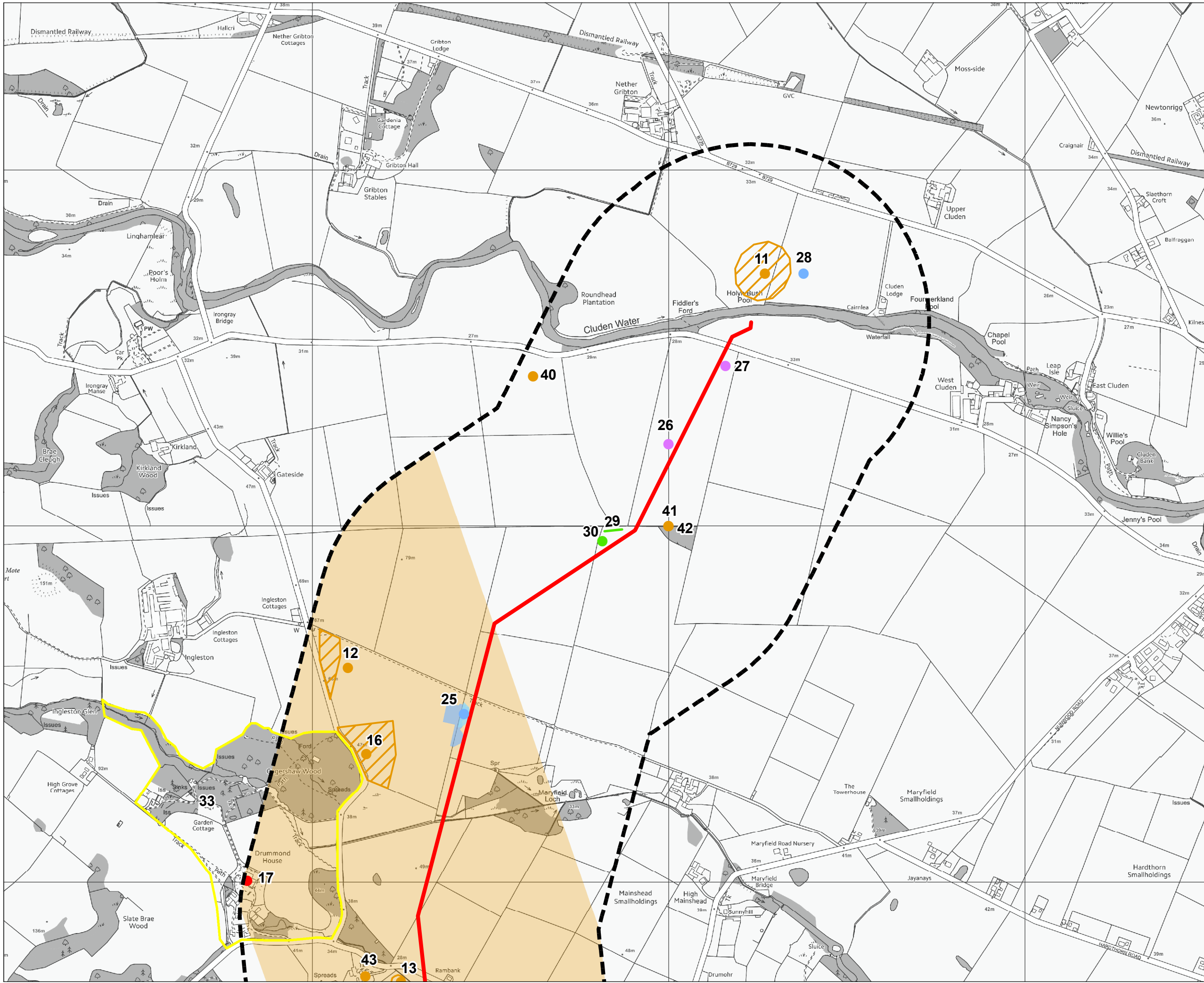
After the programme of staged assessment and mitigation has been implemented the vast majority of the known archaeological and cultural heritage features will remain unaffected by the scheme. Sites where a direct impact is currently predicted will be

preserved in situ or, if not desirable and feasible, by record. Full consultation will be maintained with the Dumfries & Galloway County Archaeologist throughout all stages of archaeological mitigation. Predicted residual impacts are summarised in Table 8.9.

Table 8-9 Summary of Impacts and Mitigation Measures

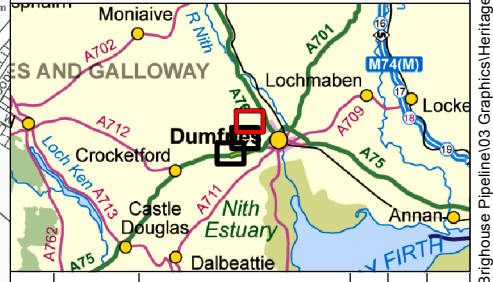
Aspect	Impact	Proposed Mitigation Measures	Residual Impact
During Construction			
Site Specific	<p>Pipeline construction activities could have the potential to impact on archaeological and cultural heritage remains.</p> <p>A total of 8 sites within the pipeline corridor were assessed for the significance of impact the proposed pipeline could have on them.</p>	<p>Prior to construction an earthwork survey will be carried out to make a record of the form and extent of potential earthworks noted as uneven ground during the FRS at site RSKID 39.</p> <p>A general archaeological watching brief will be carried out during construction to deal with any unanticipated archaeological remains encountered during topsoil stripping, benching and/or pipeline trenching.</p> <p>The impact on any significant archaeological remains encountered during the watching brief will be minimised where possible by reduction of the working width to a minimum practicable level, the placement of geotextile matting or bog mats and/or careful reinstatement. Archaeological remains which cannot be preserved in situ will be archaeologically excavated and recorded, as appropriate.</p>	<p>MINOR</p> <p>The vast majority of the known archaeological and cultural heritage features will remain unaffected by the scheme. Sites where a direct impact is currently predicted will be preserved in situ or, if not desirable and feasible, by record.</p>

Aspect	Impact	Proposed Mitigation Measures	Residual Impact
Listed Buildings	An initial assessment of Listed Buildings within the pipeline corridor has been undertaken. There are two listed buildings within the pipeline corridor (RSKID 17 & 18). The construction of a buried cross-country pipeline will not have any direct or residual impact on listed buildings; all statutory protected sites have been avoided by the preferred route option.	No mitigation measures are proposed.	No residual impact is anticipated.
Historic Landscape	During construction, the pipeline will impact on extant features of the historic landscape, such as field boundaries, ponds and quarries. The physical impact on such features will be Small to Negligible and temporary.	No mitigation measures are proposed.	No residual impact is anticipated.
During Operation			
Site Specific Listed Buildings Historic Landscape	A phased programme of post-excavation assessment, analysis, reporting and publication will be implemented, as necessary. Any findings shall be recorded and distributed to interested parties	No mitigation measures are proposed	No residual impact is anticipated



- Legend:**
- Proposed Pipeline Route
 - 1km Area of Search
 - Listed Building
 - Sites and Monuments Record
 - Sites and Monuments Record
 - Archaeology feature identified from Walkover Survey
 - Archaeology feature identified from Walkover Survey
 - Cropmarks visible on aerial photograph
 - Cropmarks visible on aerial photograph
 - Archaeological feature identified from historic maps
 - Archaeological feature identified from historic maps
 - Archaeological feature identified from BGS
 - Non Inventory Gardens and Designed Landscapes
 - Area of high potential for the occurrence of a Roman road

This map contains data from the following sources:-
 NMR
 Historic Scotland
 Dumfries and Galloway Council HER
 Coordinate System: British National Grid
 Projection: Transverse Mercator
 Datum: OSGB 1936
 Units: Meter



Rev	Date	Description	Drn	Chk	App
03	06/05/2015	Updated Route	FC	SR	JS
02	14/04/2015	Updated Logo	FC	SR	JS
01	18/03/2015	Sites Added	FC	SR	JS

Cluden to Lochfoot Pipeline



TITLE: **Figure 8.1 - Heritage Assets Map 1 of 3**

