

# The Boyne Greenway and Navigation Restoration

Navigation Restoration Feasibility: Executive  
Summary Report

Meath County Council

December 2023



# Notice

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This document has 18 pages including the cover but excluding the appendices.

## Document history

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## Client signoff

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Project	The Boyne Greenway and Navigation Restoration
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# 1. Introduction

## 1.1. Scheme Context

Over the last number of years Meath County Council have been developing a plan to deliver the Boyne Greenway and Navigation Restoration, which aims to provide a high-quality walking and cycling route and restore the Boyne Navigation including the canal sections and associated locks which are a key feature of industrial heritage within the Boyne Valley.

The proposed Greenway Scheme will extend from the Andy Brennan Park in Navan Town to the main gates at the Oldbridge Estate. The scheme will therefore route adjacent to some of Meath's most significant visitor attractions including Slane Castle, the Battle of Boyne site and the UNESCO World Heritage site at Brú na Bóinne. The proposed restoration of the Boyne Navigation will extend from Oldbridge Guard Lock to the canal harbour in Navan.

The proposed Greenway Scheme will be in the order of approximately 26.5km long and incorporates a study area extending across the river valley. The proposed Greenway Scheme is generally envisaged to be a 3m wide path shared between pedestrians and cyclists. The proposed Greenway Scheme has the potential to increase tourism and recreational activity while offering an attractive alternative transport choice for commuters through its links to the large towns of Navan and Drogheda, bringing significant economic and health benefits to the wider community.

The Boyne Greenway and Navigation Restoration has the potential to be a flagship tourism scheme of regional, national and international significance which would provide access the wealth and diversity of ecological, cultural, industrial and historical heritage within the Boyne Valley.

This report outlines a summary of the Feasibility Study of the Navigation Restoration. The Feasibility Study was commissioned by Meath County Council to investigate the feasibility and viability of restoring the historic Boyne Navigation to working order for tourism and leisure. The study has investigated the condition of the navigation, the works needed to restore them to working order, and the practical, environmental, and policy constraints and opportunities these works present.

## 1.2. Navigation Restoration

Following the completion of the Feasibility Study of the proposed Navigation Restoration and a review of the route options for the proposed Greenway Scheme a decision has been reached that the proposed Navigation Restoration should be considered separately from the proposed Greenway Scheme. There are three key reasons for this as follows:

- **Environmental:** Due to the nature, extent and scale of the proposed Navigation Restoration Scheme, there is potential for both direct and indirect impacts, during both the construction and operational stages, which are likely to be greater than that imposed by the proposed Greenway Scheme and which will require further consideration.
- **Management:** The further development, design, construction, operation and maintenance of a scheme of this scale and specialist nature would require a competent corporate body, beyond the capabilities of Meath County Council, to manage the further stages of delivery beyond this feasibility stage.
- **Funding:** The proposed Navigation Restoration has no funding stream that is identifiable as a likely source of funding for a project of this nature.

Further detail on the how this decision was reached is provided in the following sections of this Executive Summary Report.

### 1.3. The Navigation Today

The non-tidal navigation between Oldbridge and Navan consisted of 13km of navigable river and 17km of lateral canal and lock cuts. The river sections have no navigation works or bridges, and are more or less unaltered since navigation ceased around 100 years ago. As such the navigation has remained in and used state for more than 100 years.

The canal cuts, which included a total of 19 locks, are in various states of disrepair, many are now full of sediment and unusable but there has been very little deliberate destruction; and unusually for canals, no buildings or infrastructure blocks the line.

Lock 19, Metge's, has vanished, but this is beyond the proposed head of navigation. Lock 18 in Navan gives access to the river, and whilst proposed for restoration, is not essential for completion of the through route.

Metge's lock gave access to the River Boyne above New Bridge in Navan, and provided a gravity water supply to the canal below. Since the navigation closed, the river has been modified at this location and the levels lowered. This has left the canal in Navan with no direct water supply.

The only obstructions to navigation are at Bridge 6, where the original arch bridge has been by passed by a farm access track crossing the canal on a causeway, and in Navan where a modern bridge has been constructed without sufficient navigation headroom.

The only infilled length of canal is between the Roughgrange Pumping Station and the causeway at Bridge 6; the route is now occupied by agricultural land, but no structures have been built on the line.

River levels are retained at the same level as when the navigation was operating, save for the length in Navan cited above and the reach above Cruicetown Lock no.11, where a burst in the lock cut has caused levels in the reach to drop.

The navigation has been restored through Locks 1 and 2 by IWAI and An Taisce, and boats are known to have navigated this length from the sea and reached Lock 3 Staleen, which is presently being restored by IWAI volunteers.

### 1.4. The Finished Product

The canal when restored to navigation, will create a 30km navigable waterway connecting Navan to: Slane, Brú na Bóinne and the Battle of the Boyne visitor centre. A further 4km of travel on the tidal river, links these places of interest to Drogheda. It should however be noted that unlike the Royal Canal and Grand Canal, the Boyne Navigation would not link up with any other canal, water way or river navigation network and as such is somewhat limited in terms of the type of canal tourism it could potentially generate.

The resulting navigation combines heritage of international importance with stunning countryside; two of the main drivers for tourism. The navigation length of 30km with 12 locks (excluding guard locks) would be a good length for a short break or leisurely one-week holiday, and would create business opportunities to serve this market with self-steer and skippered boats providing accommodation.

With use by unpowered boats and towpath walkers, as well as larger vessels, the navigation would become a corridor for interpreting the history of the Boyne Valley and appreciating it's natural splendour and habitat.

A ministerial order would be required to put the navigation under the auspices / authority of Waterways Ireland. It is estimated that economic benefits of at least €8 million per annum would arise.

## 2. Existing Condition.

The Boyne Navigation was created in the 19th century by the construction of a series of lateral canal and lock cuts enabling barges to navigate from Navan to Oldbridge, a distance of some 30km, from whence the barges could navigate on the tidal river to Drogheda. Barges could serve wharves on the canal and the river in Navan, and at intermediate locations.

The navigation consisted of six lateral canals and four lock cuts, each separated by a length of navigable river. There were nineteen locks: five of these were guard locks, which protected lateral canals from flood water, and one at Morgan's/Rosnaree was a double lock with two chambers in series. Two separate locks in Navan gave access to different reaches of the river, a barge heading downstream might use either, but not both.

The navigation started on the southern bank of the river at Navan and finished on the southern bank at Oldbridge, but twice crossed to the northern bank and back. The canals and cuts on the south bank are now much more accessible than those on the north, and much more is known of their condition. All the Oldbridge Lateral Canal to Staleen Lock has recently been restored by IWAI and An Taisce.

Substantial investigation and surveys were carried out to ascertain exactly the current day condition of the navigation. Overall, the navigation has deteriorated over the century since it closed, but has been subject to only limited deliberate destruction, thus the original masonry lock chambers survive in various states of repair and the masonry bridges are all in reasonable order, carrying the traffic expected of them without any reinforcement that might block the navigation. Beyond normal deterioration, specific issues are:

1. The loss of the Town Weir in Navan, lowering the upper reach of the river, rendering lock 19 (Metge's) redundant and denying the canal here a gravity water supply.
2. A new bridge in Navan, which has inadequate clearance for navigation – this bridge serves pedestrians and occasional vehicle access.
3. Deer Park Lock (from the topographical survey) appears to be too narrow for barge navigation.
4. A breach (naturally occurring) in the riverside bank of the Cruicetown cut, resulting in the river running through the cut and the breach, rather than over the adjacent weir.
5. A pumping station building on the line of the Staleen Lateral Canal at Roughgrange – this building is believed to be redundant.
5. The loss of some 600m of the Staleen Lateral Canal to the west of Brú na Bóinne visitor centre to agricultural land.
6. A causeway across the canal within the lost length that bypasses a bridge and is used by heavy agricultural plant.
7. At the Brú na Bóinne visitor centre, a causeway across the canal links the visitor centre to a new bridge over the river. This is used by pedestrians and cyclists only.

There is a further issue for towpath users, in that there are no crossings from the northern bank to the southern bank where the navigation crosses.

In summary: the uppermost length of river in Navan has been lowered, there is one new bridge and two new causeways over the navigation, 600m of canal has been filled in at Brú na Bóinne, and a breach has occurred in the lock cut at Cruicetown.

Other than the above, the works to restore the navigation will entail the reversal of 100 years of neglect.

## 3. Restoration Works

### 3.1. Overview

There is no engineering reason to divert from the historic route – all the canal sections can be repaired or rebuilt in situ.

Oldbridge Lock and Oldbridge Guard Lock have been restored, the remainder of locks can be restored using structural conservation techniques.

All the historic bridges (and the new one at Brú na Bóinne) have adequate headroom for navigation; although it should be noted that passages of larger vessels would be improved if headroom at Bridges 1 and 4 were increased.

Two new lifting bridges are required, one adjacent to Bridge 6 near Roughgrange, to carry the farm track over the canal, and one in Navan to carry the new vehicle and pedestrian access path over the canal.

A new water supply will be needed in Navan as the canal is now above the lowered level of the river at Metge's lock. This would be a small pumping station abstracting water from the river nearby.

### 3.2. Issues and Constraints

There are no un-surmountable engineering issues facing the restoration – all works are within the scope already experienced on other navigation projects and are less demanding than those encountered on the Royal Canal and the Shannon-erne link (Ballinamore and Ballyconnell Canal).

Water supply is an issue at Navan (as has been historically) and there may be periods in dry summers with low rainfall where navigation has to cease temporarily. The navigation will also close in flood conditions and the works must be resilient to temporary inundation.

The Boyne Navigation is situated within a SAC, and as such works affecting the river and its surroundings (as in most canal restorations) must be: planned, delivered, and managed with care.

Brú na Bóinne is a world heritage site that rightly has a high level of protection from intrusive development proposals. However, the World Heritage Site Management Plan makes reference to the role of the navigation in the history of the Boyne Valley and makes specific provision for restoration. This will not avoid the need for sympathetic development, but the principle of restoration to navigation is accepted.

### 3.3. Summary of Works Required

The river sections are believed to be already navigable at suitable river levels, but cannot be reached until the canal sections are restored. To reverse the neglect on the canal sections the following is required:

1. Dredge/excavate the canal channel to its original width and depth – typically: 11m wide, by 1.5m water depth, and 0.3m freeboard.
2. Raise any low spots on the canal banks.
3. Lay an impermeable canal liner.
3. Repair the masonry on each of 18 locks (Metge's Lock is not proposed for restoration) and equip each lock with: gates and racks, bollards, safety ladders, and lock side furniture.
4. Each bridge over the canal is carrying the normal traffic of the district – each bridge will need to be inspected for safety of navigation and any repairs undertaken.
5. Create a continuous towpath (excluding the provision of river crossings where the navigation changes banks). It is likely that the towpath will be the Greenway.
6. Furniture and equipment will be needed to facilitate leisure traffic e.g.: landing stages, signage, and weir guidance works.

For the specific locational issues identified:

1. Provide a pumped water supply at Navan.
2. At each new crossing point, either a high-level bridge with navigational clearance will be required or a moveable structure (swing or lift bridge).
3. Construct a new wider lock at Deer Park.
4. Excavate a new canal channel, with waterproof lining and parallel towpath, to replace the infilled section west of Staleen Lock.
5. Repair the breach at Cruicetown, and either raise water levels in the river or lower the canal bed and shallow cill at Cruicetown lock, and then lower the deep cill and lock floor at Castlefin Lock.

## 4. Environmental

### 4.1. Overview

The study area is considered to be in an extremely sensitive environmental setting due to the following key points:

1. The study area encompasses European designated sites (the River Boyne and Blackwater SAC and River Boyne and River Blackwater SPA);
2. The study area is located in one of Ireland's and Meath's richest and most significant archaeological landscapes, which incorporates significant visitor attractions including Slane Castle, the World Heritage Site (WHS) of Brú na Bóinne and the Battle of Boyne site in Oldbridge. It also contains a substantial number of known archaeological sites dating from the Neolithic right through to the present.
3. Given the location, scale and nature of the proposed development, it is considered that the navigation scheme could potentially affect Ireland's statutory obligations to meet specific objectives in terms of water quality and resources under the EU Water Framework Directive (2000/60/EC), and /or to meet specific requirements under the Habitats Directive (92/43/EEC). These directives form the cornerstone of Europe's nature and water quality policy in order to safeguard against potentially damaging developments.
4. There are 2 no. areas of Annex I habitats directly within the footprint of the scheme and these habitats are afforded protection at an international level.
5. There are 7 no. of proposed Natural Heritage Areas directly within the footprint of the scheme and these habitats are of national importance..
6. The Meath Landscape Character Assessment states that this Landscape Character Area (LCA) of the study area has Exceptional Landscape Value, High Landscape Sensitivity and Low Landscape Capacity for most types of development.
7. Two public drinking water wells (and associated protection zones) are located within the study area: Slane Public Drinking Water Supply; and the Sheepgrange Group Water Scheme.
8. In addition it is noted that shallow groundwater is likely to be encountered in the vicinity of the River Boyne and River Blackwater SPA and SAC within the study area, and hence surface water / groundwater interactions are likely to occur in this area.

Furthermore, there are other features of high ecological value within the footprint of the scheme which are afforded protection including;

1. Protected native faunal species; Otter, kingfisher, Salmon, lamprey, White Clawed crayfish, badger, 8 bats species, deer, pine martin and a diverse range of waterbirds, wildfowl, birds of prey and passerine species.
2. Habitats (which accommodate protected species); Woodlands, watercourses, riparian habitats, marshes, wet grasslands, grasslands and scrublands.

On this basis Statutory Approval (Planning Consent) is seen as a considerable issue that contains a number of unknowns and uncertainties at this current feasibility stage.

### 4.2. Ecology Summary

The main constraint to the proposed project is the fact that it is predominantly within (and directly adjacent to) the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA. There are also other European sites present within the zone of influence of the proposed project, including: the Boyne Coast and Estuary SAC, and Boyne Estuary SPA situated downstream of the proposed project.

Due to the nature, extent and scale of the project, there is potential for both direct and indirect impacts, during both construction and operation, such as loss or modification of habitats, disturbance to species, habitat or species fragmentation, reduction in species density and changes in key indicators of conservation value such as water quality and hydrological regimes. The potential impacts during construction and operation of the proposed project will require detailed consideration, examination, study, surveys and ecological assessment.

The scheme will involve the restoration of the existing, but redundant, canal and its associated infrastructure. The proposed project will also involve works to the main channel of the River Boyne to make it navigable for boats. Thus, during construction phase the proposed project has the potential to involve activities such as excavation of infill and materials from the canal, vegetation clearance, restoration of canal walls and lock gates, establishment of canal – river and river – canal connections, establishment of a towpath, dredging of the River

Boyne and hard engineering infrastructure along riverbanks. All these construction related activities have the potential to result in significant effects on the designated conservation sites and local biodiversity. Dredging activities in the main channel of the River Boyne during the construction phase will result in negative impacts to morphology and flow processes within the channel.

The operation of the proposed project will require the 're-watering' of the canal. The water source and method of 're-watering' the canal has not been determined and therefore the potential drawdown zone is currently unknown. 'Re-watering' of the canal has the potential to impact surface water and groundwater levels, the hydrological regime of waterbodies and associated processes, and water dependant species and habitats.

Whilst the operation of the navigation would be positive in terms of a recreational amenity and the local economy, the introduction of boats along the river will most likely result in the disturbance and displacement of protected species such as otter, kingfisher. The introduction of boats has also a high potential to result in a deterioration in water quality within the River Boyne which in turn can have deleterious effect on aquatic species. The introduction of boat traffic also has the potential for the generation of waste, such as foul material and hydrocarbons, to the River Boyne and canal. These potential impacts will persist during the operational phase of the project.

## 5. Opportunities and Benefits

The restored navigation would bring many opportunities for leisure and tourism, including: self-steer holiday boat hire and ownership, commercial openings for hotel and restaurant boating, canoe and paddle boating, and active travel along the towpath. These opportunities can be harnessed to the benefits of the local economy and employment. In addition, time spent by waterways is recognised to bring health and wellbeing benefits to local communities.

The navigation presents opportunities for enhanced biodiversity along the Boyne and within the valley, by enlarging habitat areas and promoting further diversity with alternative wetland settings and by offering improvement to existing habitats connected with the SAC; including canal habitats that are presently of limited value.

The cultural heritage of: Brú na Bóinne, the Battle of the Boyne, and other locations along the valley, can be provided with improved non-car access and set in the context and history of the Boyne Valley.

The heritage value of the navigation, the river's role in the industrial history of the valley, and the developing eighteenth century navigation technology can be explored.

As the navigation will be a new entry into the tourism market, there is the opportunity for the Boyne Navigation to be a European leader in clean tourism technology with zero carbon propulsion for vessels, hull designs that minimise wash and domestic arrangements that capture all waste, thereby preventing discharge of waste be into the river.

## 6. Programme, Phasing and Costs

### 6.1. Programme

Canals take many years to restore from feasibility study. The first 6 months are likely to be driven by the vital need to agree the primary public body responsible for delivering and managing the restored canal.

Thereafter, the next 2 years would involve: targeted engineering surveys, baseline environmental surveys and wide ranging stakeholder and public engagement.

The next couple of years would involve detailed design and Environmental Impact Assessment, which would inform the: planning applications, licences, and consents.

Due to the long linear nature of the canal and the large costs, it is likely that the canal works would be spread over 3 phases of construction extending through a 5 year period.

Overall it is believed that from feasibility study to full canal restoration could take around 10+ years which is considerably longer than typical greenway programme which tend to be delivered in 3–5 years.

### 6.2. Phasing

The navigation can be restored in phases – with early “quick wins” extending the existing restored section from Staleen Lock to and beyond Brú na Bóinne, reintroducing navigation to Navan and also refurbishing the Slane Lateral Canal. These early stages, which are all on the southern bank of the river and can be served with good road access for the construction phase, can then be progressively joined up by restoration of the northern bank cuts which have more problematic access but can be reached via the restored canal sections.

The restoration of the canal in Navan is particularly attractive for generating visitor footfall in the town, and connecting the Brú na Bóinne visitor centre to the Battle of the Boyne Visitor Centre (and also to the sea at Drogheda) will provide significant early benefits.

### 6.3. Costs and Benefits

The entire scheme: construction, management, and delivery costs have been assessed and are estimated at approximately €92.1million, (for comparison, the entire replacement cost of the Waterways Ireland Network is estimated at €1.2bn).

The cost summary is:

No	Item	Budget Cost
1	Navan to Slane (using bentonite clay liner )	€31,563,554
2	Slane to Staleen (using puddle clay liner)	€12,338,288
3	Locks, Bridges, Culverts, Water Control, Temporary Works and Fencing.	€20,824,527
<b>Restoration Works Sub Total</b>		<b>€64,726,369</b>
4	Marina's (2nr) and Navan Terminus	€6,160,917
5	Weirs – 33nr	€3,204,860
6	Repairs to Restored Oldbridge Section	€724,695
7	Meath CC Staff Costs	€1,463,700
8	Surveys and Investigations	€3,163,496
9	Detailed Design, Site Supervision, Programme Management and Cost Control	€5,751,942
<b>Additional Costs Sub Total</b>		<b>€20,469,611</b>
<b>Scheme Sub Total</b>		<b>€83,732,280</b>
10	Contingency at 10% of scheme costs	€8,373,228
<b>Total</b>		<b>€92,105,508</b>

**Table 6-1 - Budget Costs**

In comparing pure restoration costs (items 1 to 3) the cost are around €64.73m, which quates to around €3.9million per km. As a reality check, the cost of restoring the Cotswold Canal is in the region of €4.17million per km.

The annual benefits of at least €8 million to the local economy of the Boyne Valley (the economic value of all private boats alone on the Waterways Ireland network was estimated at €88 million in 2016, without considering other benefits) – successful development of economic opportunities would enhance this benefits figure and a significant portion of the construction cost would be spent in the local economy thus would provide local employment during the construction phase.

A long track record of canal restoration in Ireland has demonstrated that restoration of the Boyne Navigation is achievable and will bring significant benefits to the area, including boosting tourism opportunities in a non-car, ultra-low emissions initiatives.

## 7. Management and Funding

Whilst the Feasibility Study for the proposed Navigation Restoration sets out a clear detail of the scale and nature of work to be carried out, the further development, design, construction, operation and maintenance of a scheme of this scale and specialist nature would require a competent corporate body to manage the further stages of delivery beyond this feasibility stage. Meath County Council has carefully assessed the detailed findings of the feasibility report and has determined that it is not the competent authority to undertake the further stages.

At present the canal sections are not generally navigable and thus there is no role for a navigation authority as such. In the fullness of time such an authority will be needed both to maintain the works and to create and enforce the regulations necessary for orderly and safe use of the navigation. Presently An Taisce and IWAI Boyne Navigation Branch act in this capacity on canal sections, with the Office of Public Works regulating use of the river sections.

Ireland has only one main navigation authority, Waterways Ireland, whilst there are a few other local navigation authorities such as the Lough Corrib Navigation Trustees in Lough Corrib in County Galway and Kerry County Council for the Tralee Ship canal. However, there is no navigation of the scale of the Boyne, or with as many navigation works, that is operated by anyone other than Waterways Ireland.

The project also represents a major undertaking in terms of likely capital cost. In this context the potential source of funding for a project of this nature requires further consideration and certainty with regards to the potential source of funding before the project should proceed beyond the Feasibility Stage. Unlike the Boyne Greenway project, which is subject to existing and potential future funding through the Transport Infrastructure Ireland annual funding allocations for Greenways from the Department of Transport, the Navigation Restoration has no similar existing funding stream that is identifiable as a likely source of funding for a project of this nature.

When compared to one another the Greenway Scheme and the Navigation Restoration Scheme are projects of differing scales and complexities and this is reflected in the potential order of magnitude capital costs with the greenway estimated to potentially cost in the region of €25 million and the navigation restoration estimated to potentially cost €90 million.

## 8. Conclusion

### 8.1. Engineering

There are no un-surmountable engineering issues facing the restoration – all works are within the scope already experienced on other navigation projects and are less demanding than those encountered on the Royal Canal and the Shannon-Erne link (Ballinamore and Ballyconnell Canal).

### 8.2. Environmental

The main environmental constraint to the proposed project is the fact that it is predominantly within (and directly adjacent to) the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA. There are also other European sites present within the zone of influence of the proposed project, including: the Boyne Coast and Estuary SAC, and Boyne Estuary SPA situated downstream of the proposed project.

Due to the nature, extent and scale of the project, there is potential for both direct and indirect impacts, during both construction and operation, such as loss or modification of habitats, disturbance to species, habitat or species fragmentation, reduction in species density and changes in key indicators of conservation value such as water quality and hydrological regimes. The potential impacts during construction and operation of the proposed project will require detailed consideration, examination, study, surveys and ecological assessment.

### 8.3. Management

Whilst the Feasibility Study for the navigation restoration sets out a clear detail of the scale and nature of work to be carried out, the further development, design, construction, operation and maintenance of a scheme of this scale and specialist nature would require a competent corporate body to manage the further stages of delivery beyond this feasibility stage. Meath County Council has carefully assessed the detailed findings of the feasibility report and has determined that it is not the competent authority to undertake the further stages.

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### 8.4. Funding

The project also represents a major undertaking in terms of likely capital cost. In this context the potential source of funding for a project of this nature requires further consideration and certainty with regards to the potential source of funding before the project should proceed beyond the Feasibility Stage. Unlike the Boyne Greenway project, which is subject to existing and potential future funding through the Transport Infrastructure Ireland annual funding allocations for Greenways from the Department of Transport, the Navigation Restoration has no similar existing funding stream that is identifiable as a likely source of funding for a project of this nature.

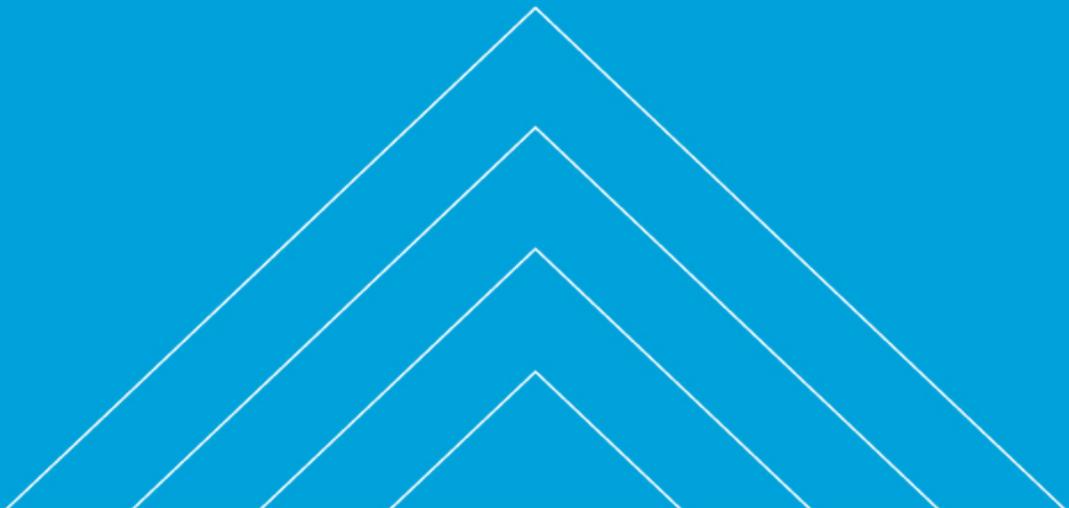
### 8.5. The Way Forward

Many restoration schemes fall between the identification of “a good idea” and the actual implementation. This is usually the result of a failure to identify a way forward and of the lack of a body being charged with: promoting, leading, and progressing the scheme.

The starting point is to working group consisting of Meath County Council, IWAI, An Taisce, and the Office of Public Works (OPW) to develop a partnership to carry the initial stages of the project forward. A key focus of this will be to identify a lead partner(s) to act as the competent authority to lead the development of the scheme beyond this feasibility stage.

Should the proposed Greenway Scheme progress independently of the proposed Navigational Restoration Scheme, the greenway should be designed to accommodate the later development of the navigation restoration and should not prohibited it. The greenway should also consider inclusion of certain elements of the navigation restoration with its scheme such as the conservation of the canal locks and gate keepers lodges.

# Appendices

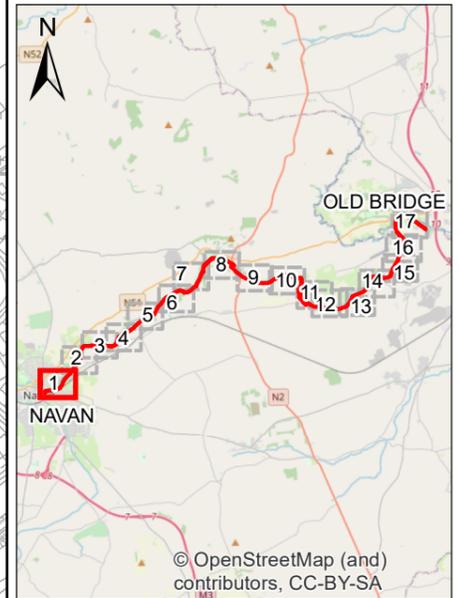
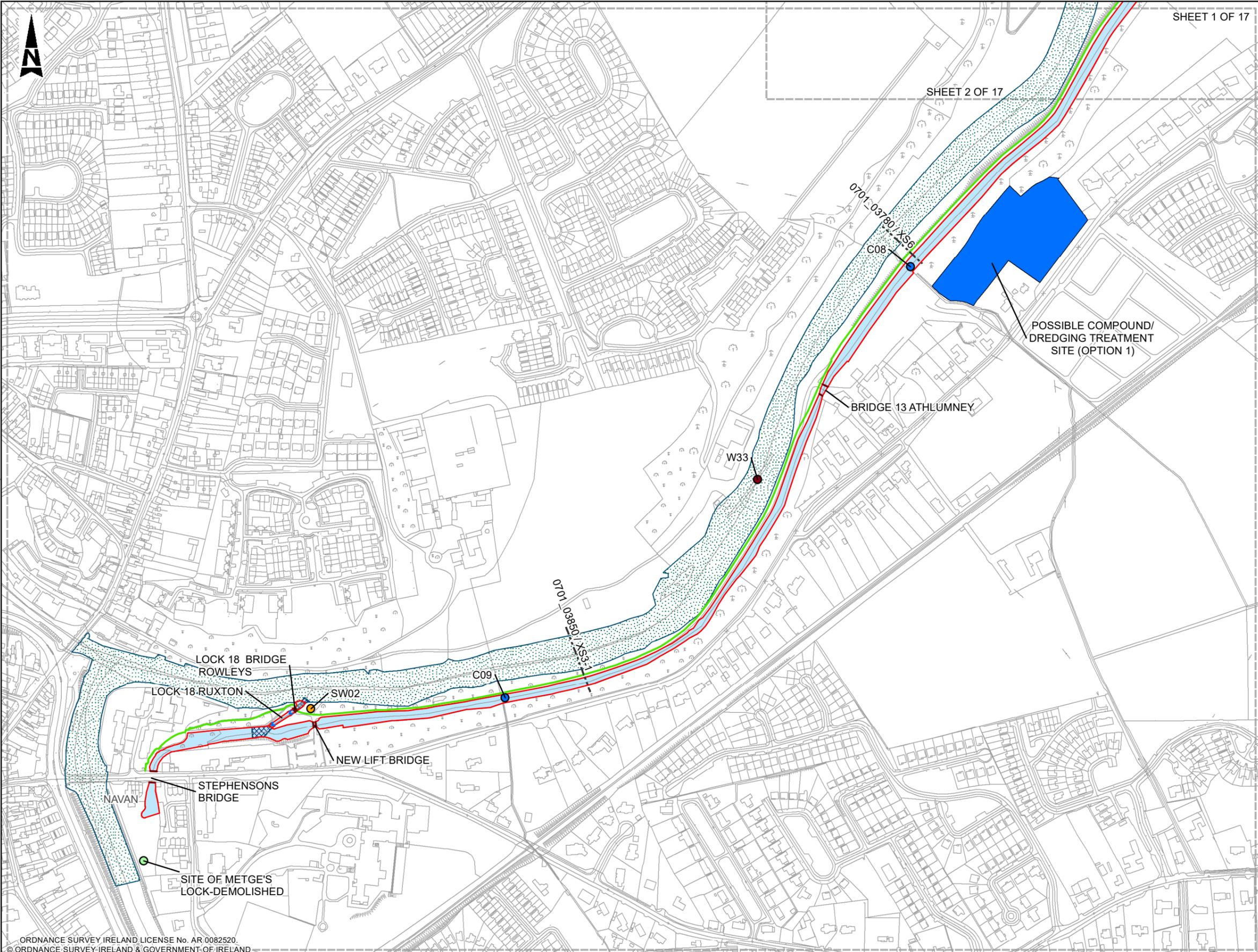


# Appendix A. Navigation Overview Route Plans

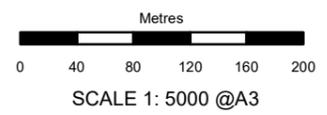
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SHEET 1 OF 17

SHEET 2 OF 17



- LEGEND**
- BOYNE SCHEME/DREDGING EXTENTS
  - BOYNE SCHEME/DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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File: 5198994\_Pla\_Boyne\_Scheme\_Extents  
Date: 2021-08-04 05:00 Plotted By: Shashikala.R

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Rev	Description	By	Date	Chk'd	Auth
A	FOR COMMENT	SR	04/08	-	-

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Swords, Co. Dublin  
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Business Park, Cork  
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Parkmore Technology Park,  
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Client  
MEATH COUNTY COUNCIL

Project  
BOYNE GREENWAY  
AND NAVIGATION RESTORATION

Purpose  
INFORMATION

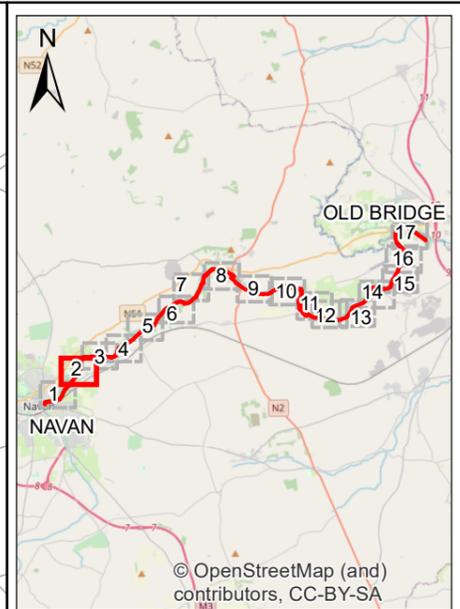
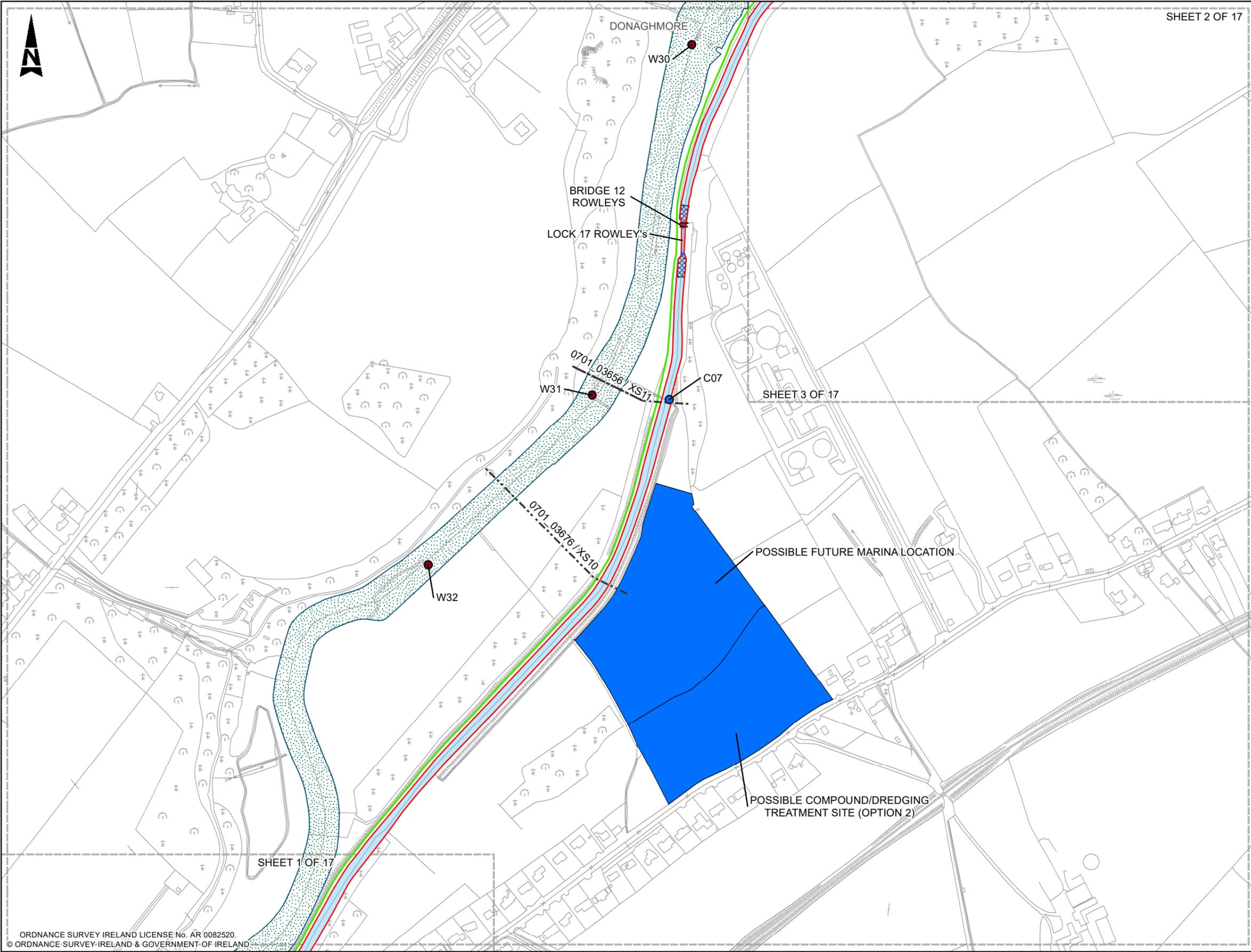
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CANAL OVERVIEW  
SHEET 1 OF 17

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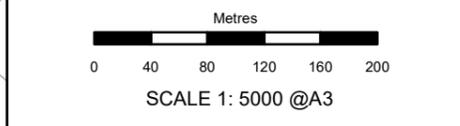
Rev  
P01

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SHEET 2 OF 17



- LEGEND**
- BOYNE SCHEME/DREDGING EXTENTS
  - BOYNE SCHEME/DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



Purpose: INFORMATION

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Project: BOYNE GREENWAY AND NAVIGATION RESTORATION

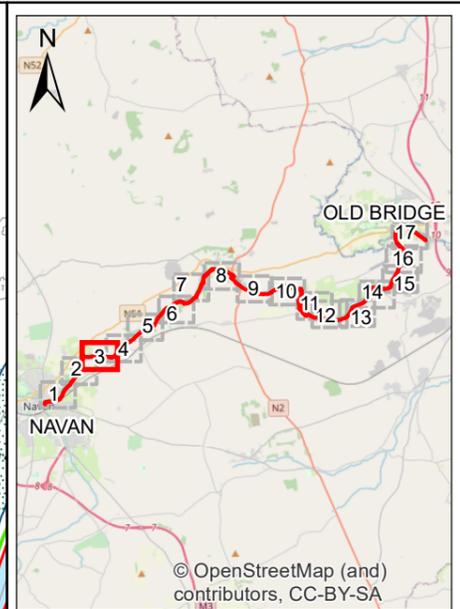
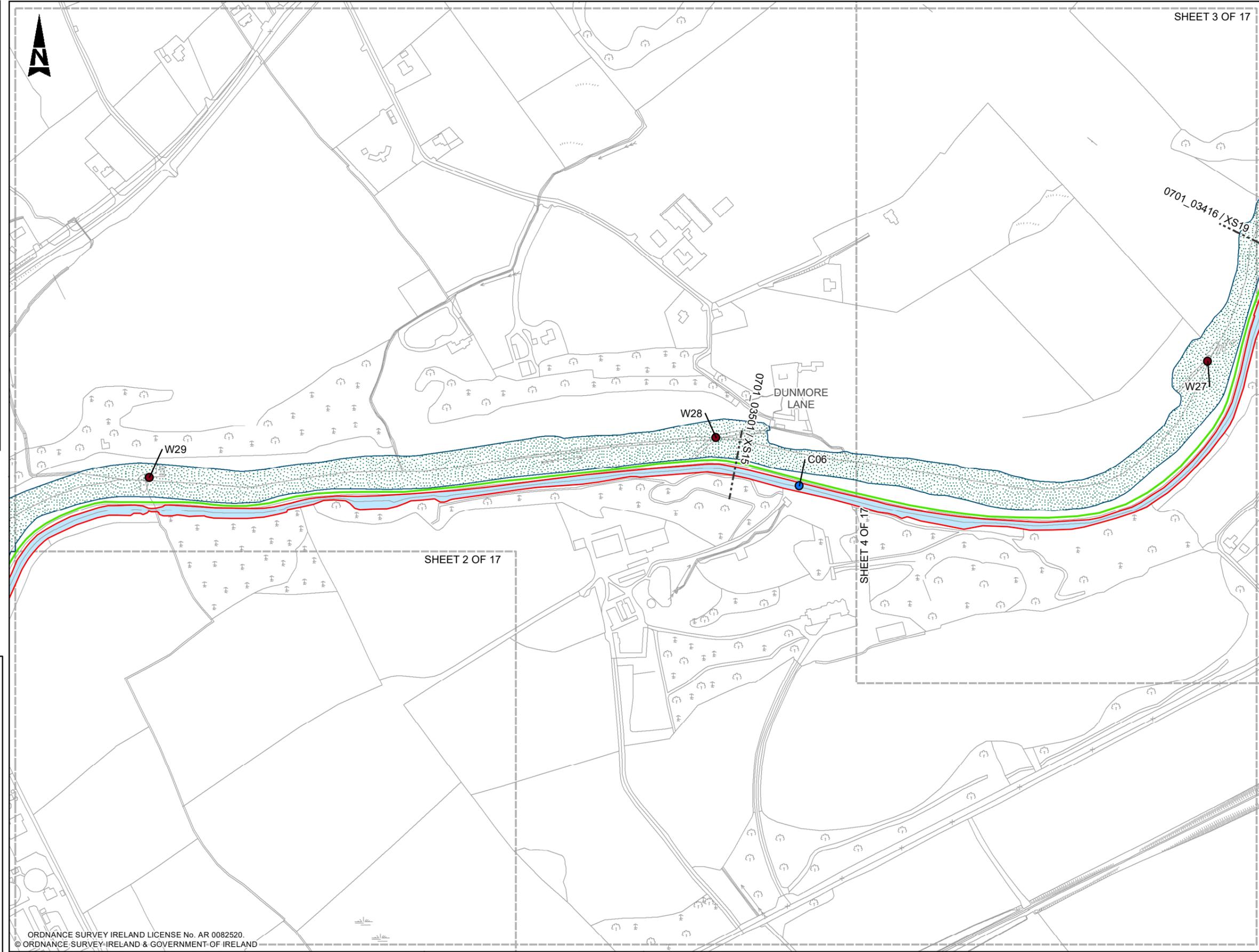
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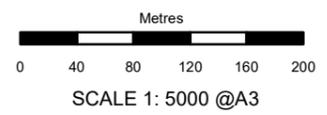
Rev: P01

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SHEET 3 OF 17



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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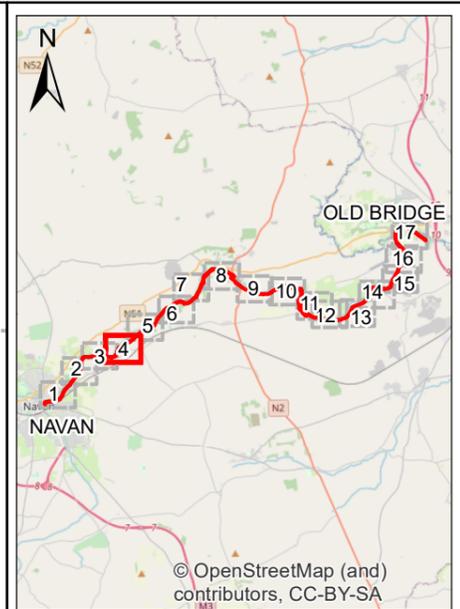
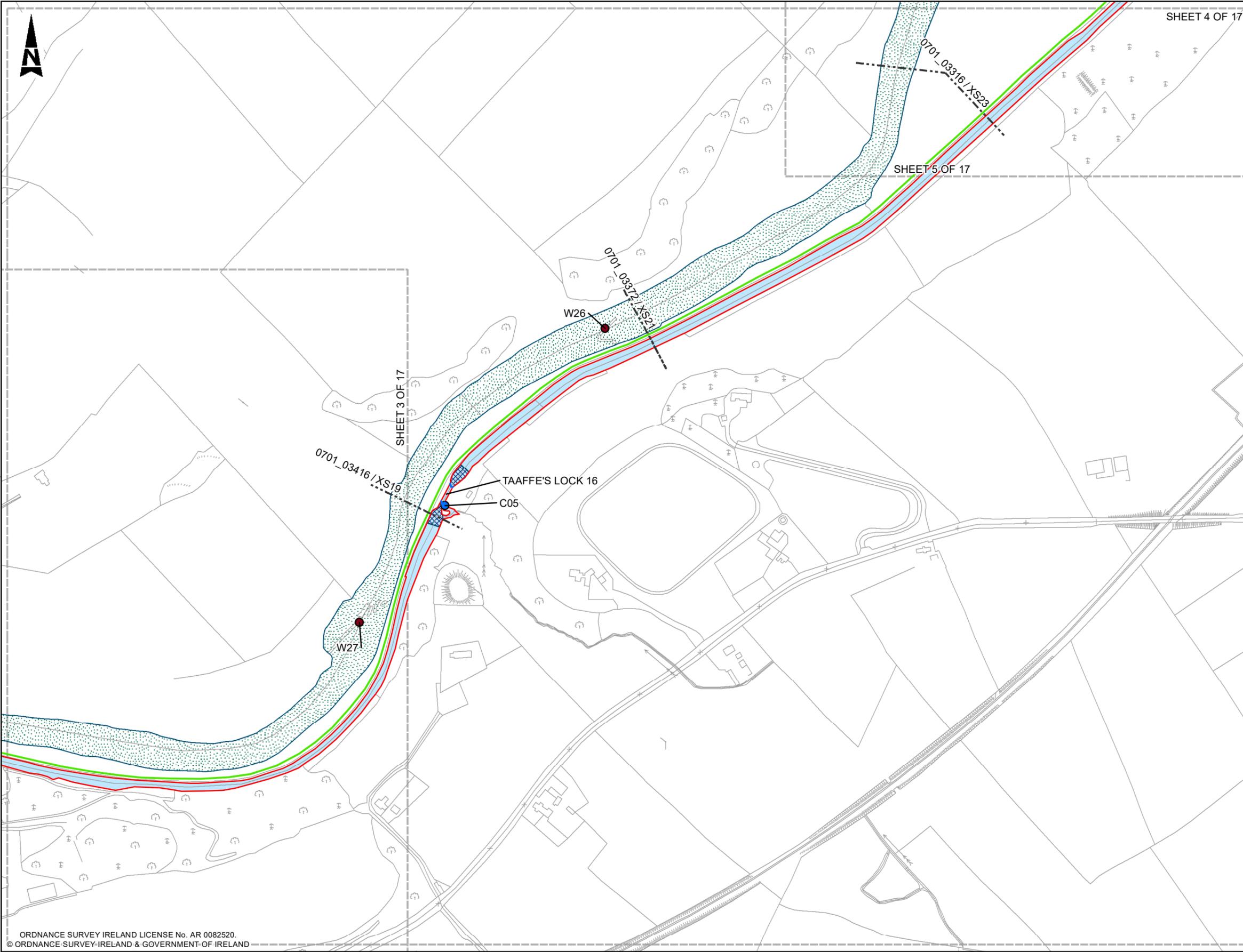
Unit 2B, 2200 Cork Airport  
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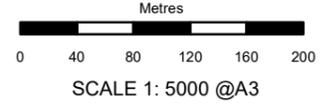
Client	MEATH COUNTY COUNCIL
Project	BOYNE GREENWAY AND NAVIGATION RESTORATION

Purpose	INFORMATION			
Title	CANAL OVERVIEW SHEET 3 OF 17			
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		Date	06/08/21	Authorised DBF
Date	06/08/21	Date	06/08/21	Date
Drawing Number	5197347 / HTR / GIS / 3			Rev
				P01

500  
250  
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A3



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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Client  
**MEATH COUNTY COUNCIL**

Project  
**BOYNE GREENWAY  
AND NAVIGATION RESTORATION**

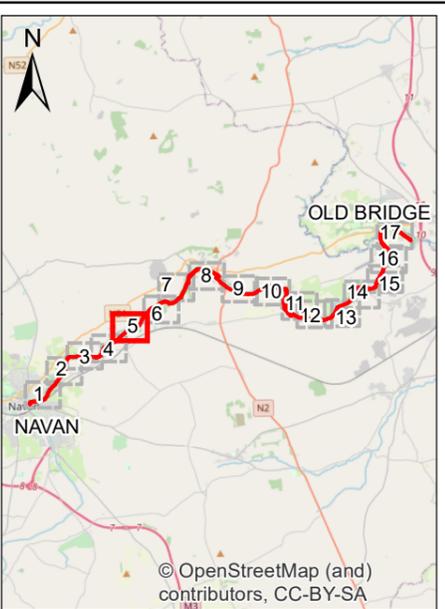
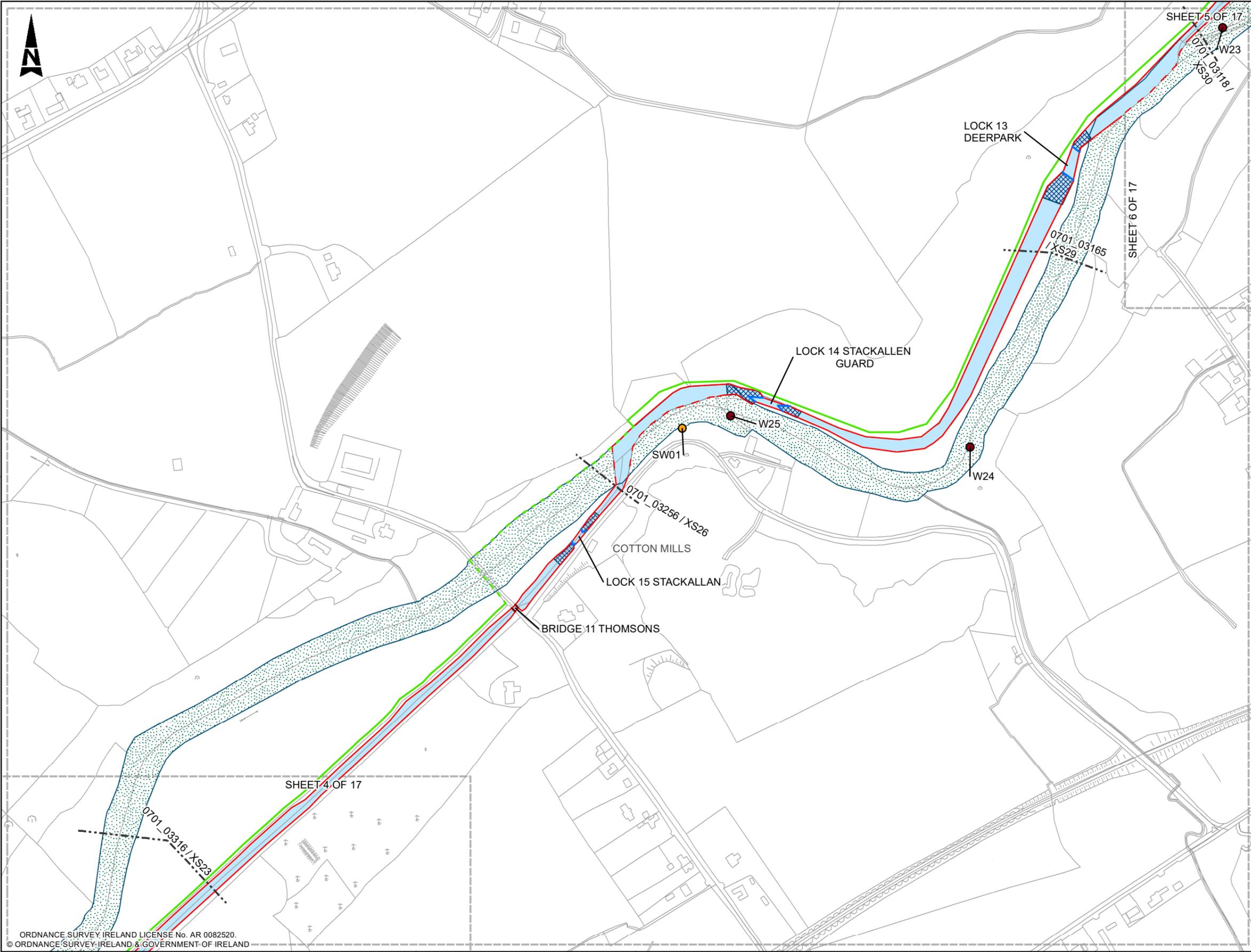
Purpose  
**INFORMATION**

Title  
**CANAL OVERVIEW  
SHEET 4 OF 17**

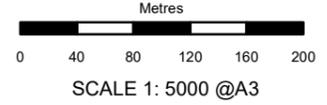
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Rev  
**P01**

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- LEGEND**
- BOYNE SCHEME DREDGING EXTENTS
  - BOYNE SCHEME DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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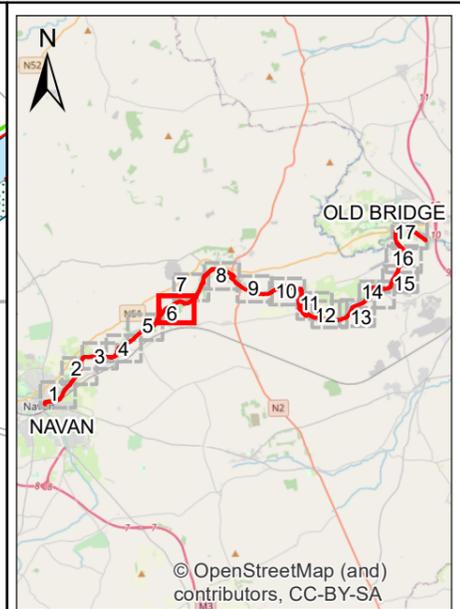
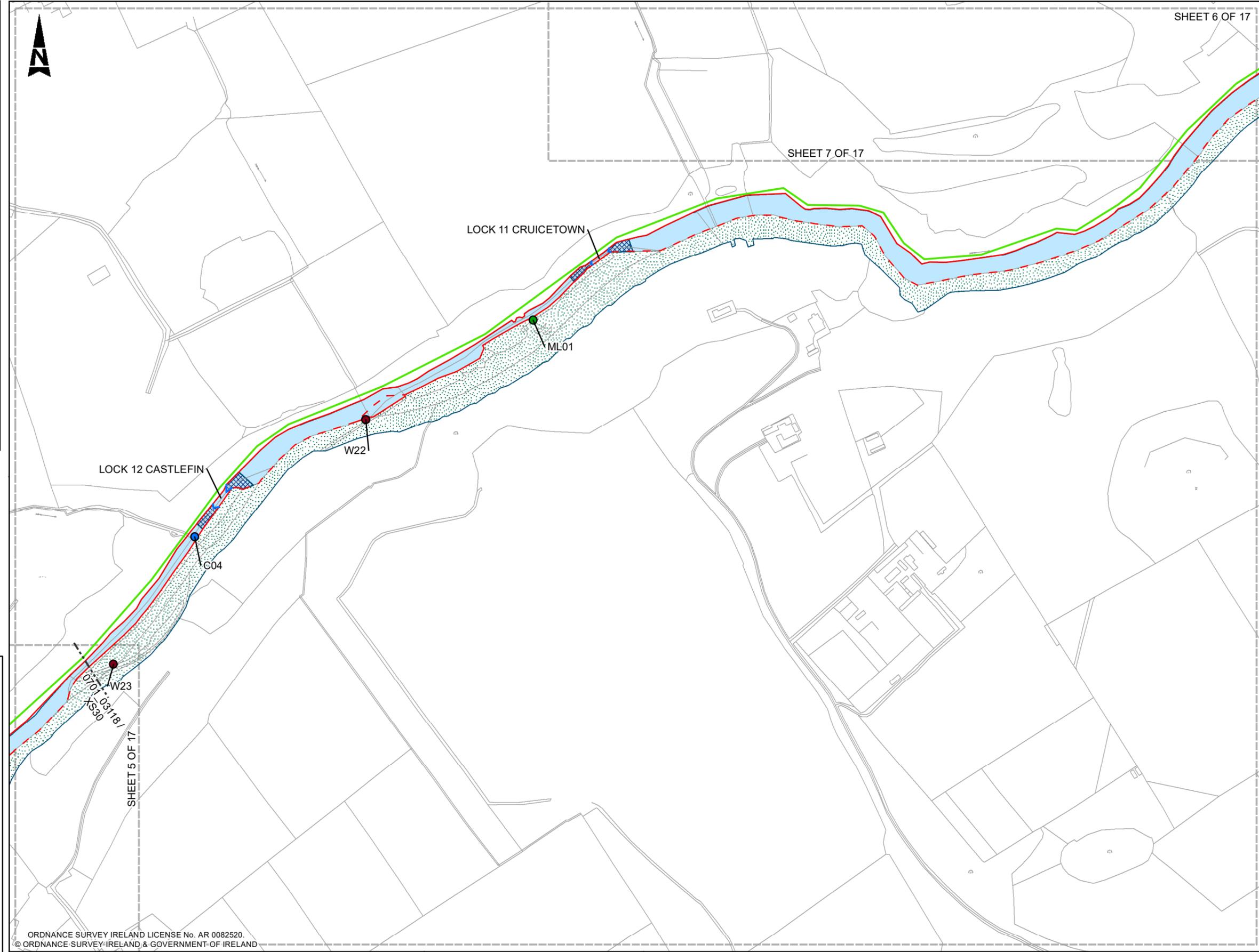
Project: BOYNE GREENWAY AND NAVIGATION RESTORATION

Title: CANAL OVERVIEW SHEET 5 OF 17

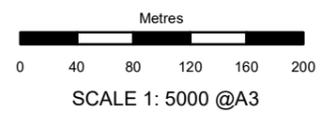
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Drawing Number: 5197347 / HTR / GIS / 5		Date: 06/08/21	Date: 06/08/21	Date: 06/08/21

Rev: P01

500  
250  
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A3



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
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Client  
**MEATH COUNTY COUNCIL**

Project  
**BOYNE GREENWAY  
AND NAVIGATION RESTORATION**

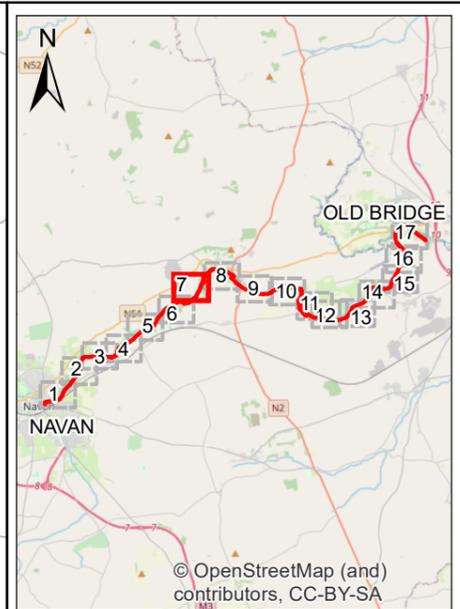
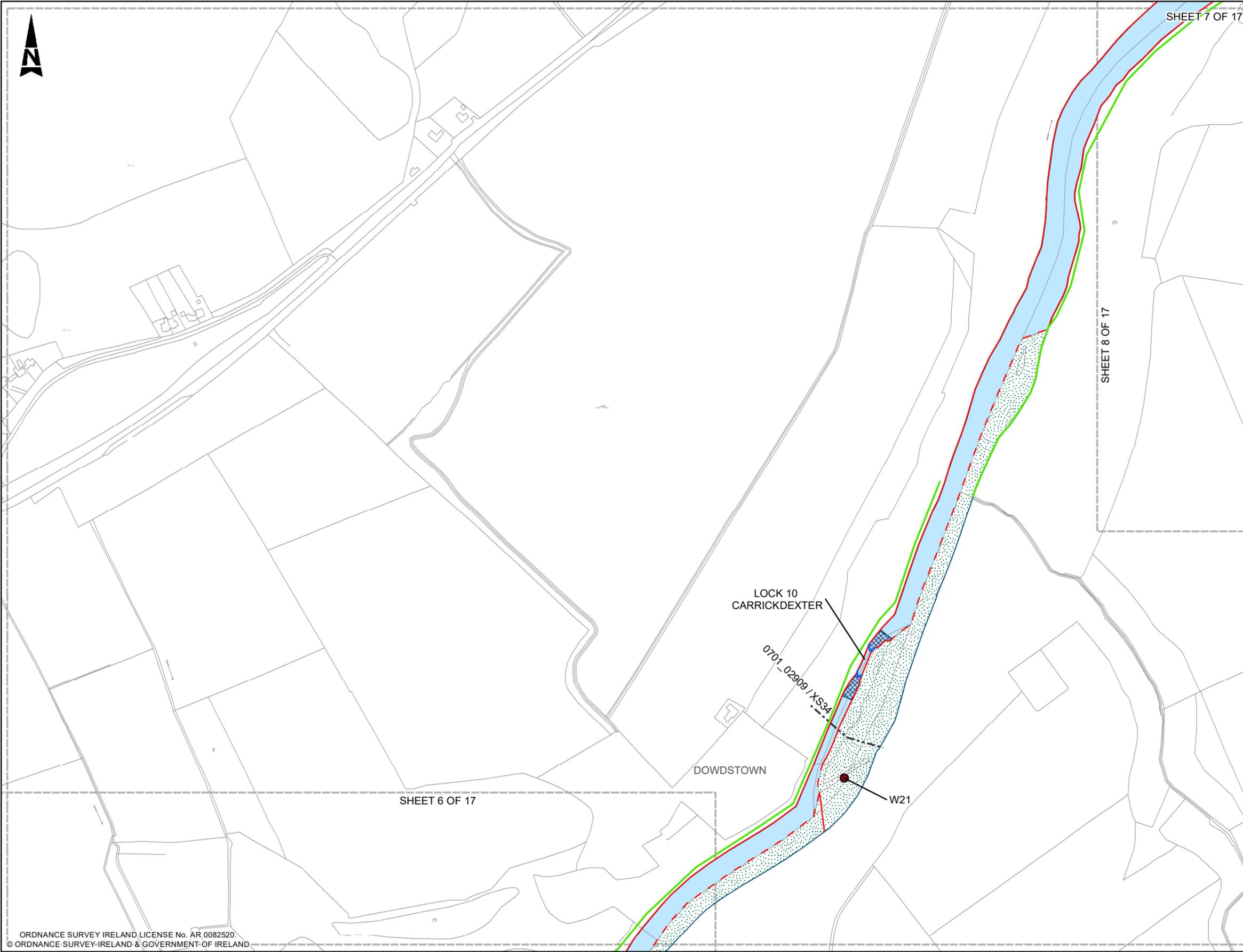
Purpose  
**INFORMATION**

Title  
**CANAL OVERVIEW  
SHEET 6 OF 17**

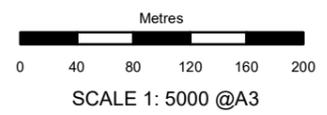
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Rev  
**P01**

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A3



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
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  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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Client: MEATH COUNTY COUNCIL

Project: **BOYNE GREENWAY AND NAVIGATION RESTORATION**

Purpose: INFORMATION

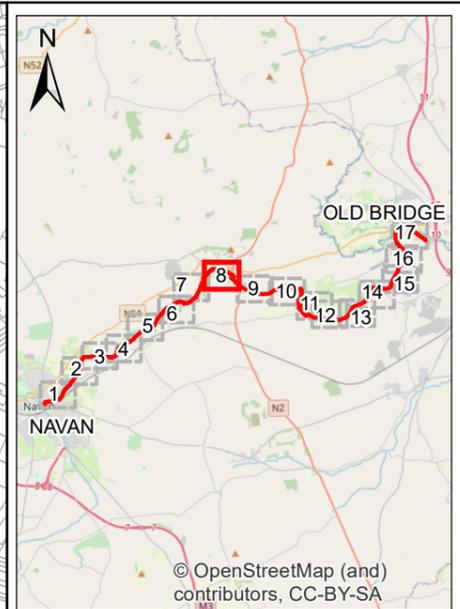
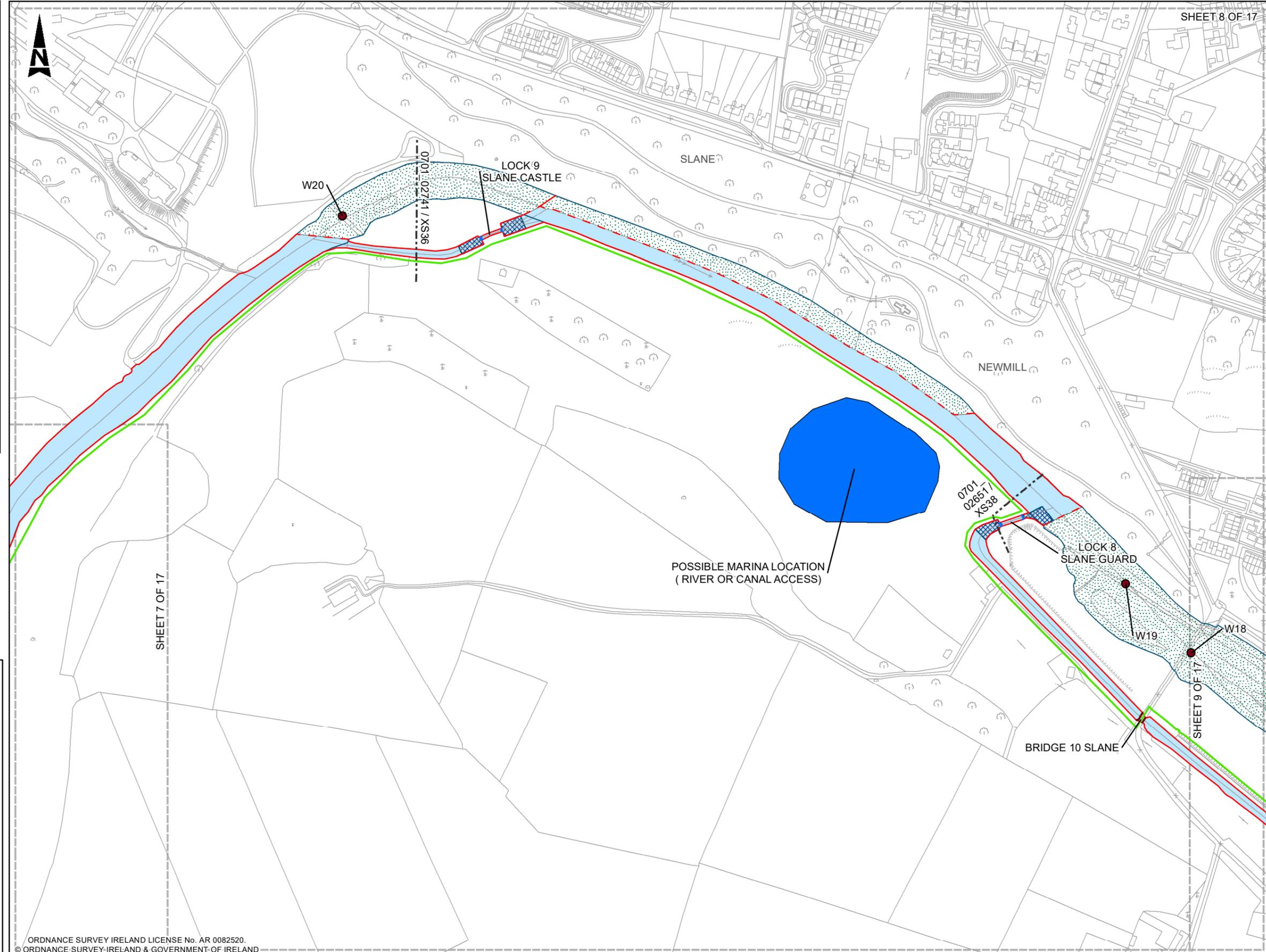
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Sheet Size: A3	Original Scale: 1:5,000	Designed / Drawn SR	Checked PM	Authorised DBF
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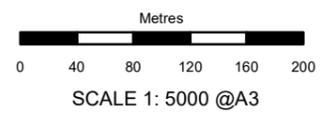
Rev: P01

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A3

SHEET 8 OF 17



- LEGEND**
- BOYNE SCHEME DREDGING EXTENTS
  - BOYNE SCHEME DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
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  - DEMOLISHED LOCK GATES
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  - LOCK LANDING (30m)
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  - OPTION B CANAL USES HISTORIC LEAT
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SHEET 7 OF 17

SHEET 9 OF 17



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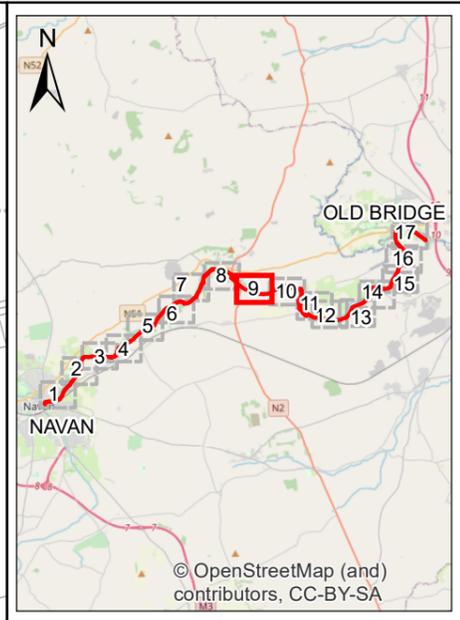
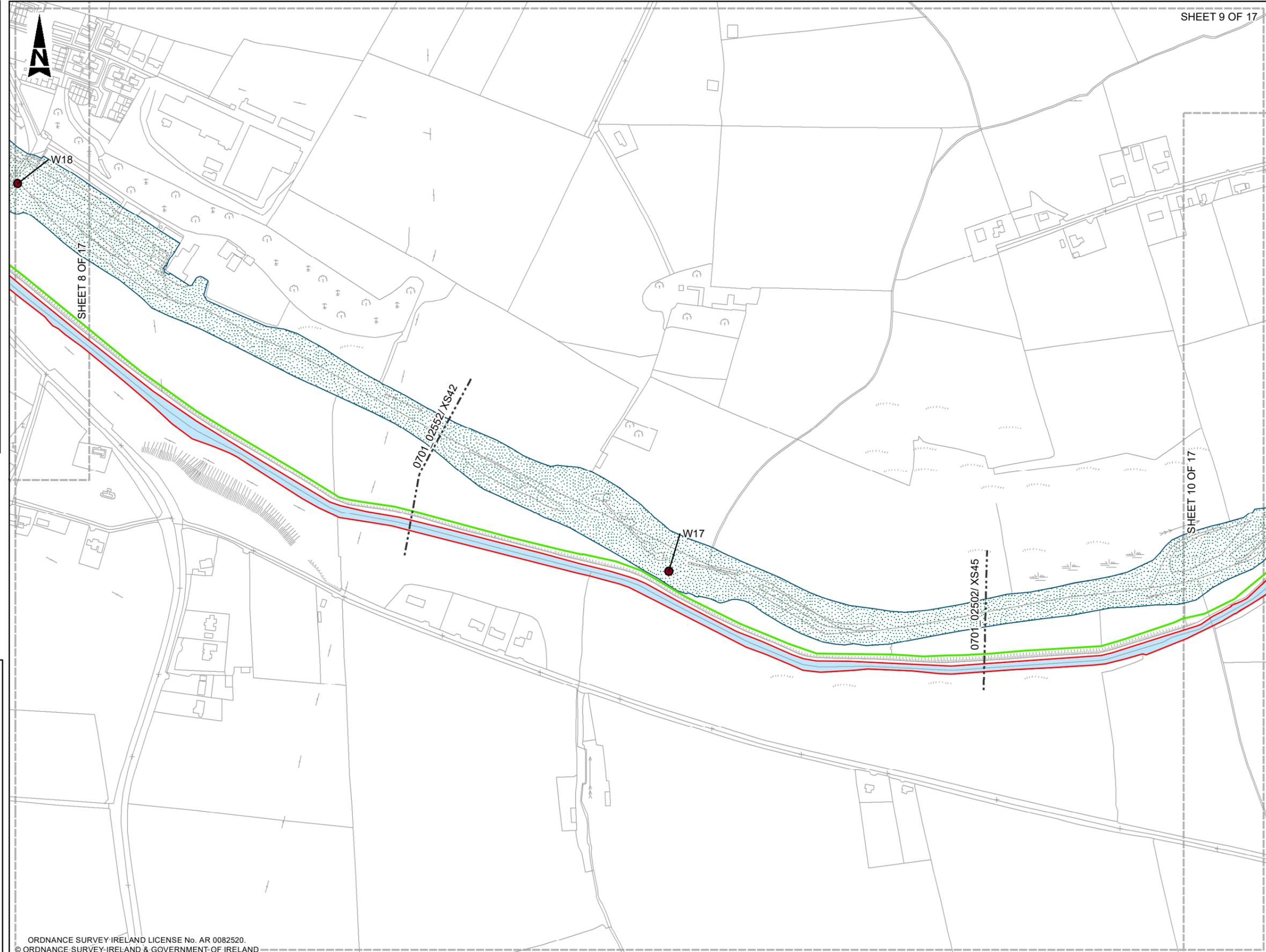
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Project	BOYNE GREENWAY AND NAVIGATION RESTORATION

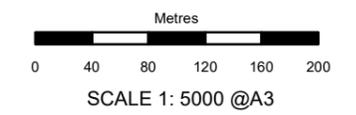
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Title	CANAL OVERVIEW SHEET 8 OF 17			
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Date	06/08/21	Date	06/08/21	Date
Drawing Number	5197347 / HTR / GIS / 8			Rev
				P01

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SHEET 9 OF 17



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
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  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
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Project  
**BOYNE GREENWAY  
AND NAVIGATION RESTORATION**

Purpose  
**INFORMATION**

Title  
**CANAL OVERVIEW  
SHEET 9 OF 17**

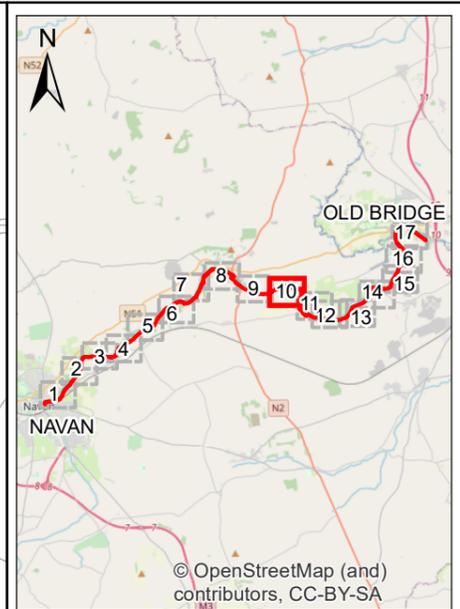
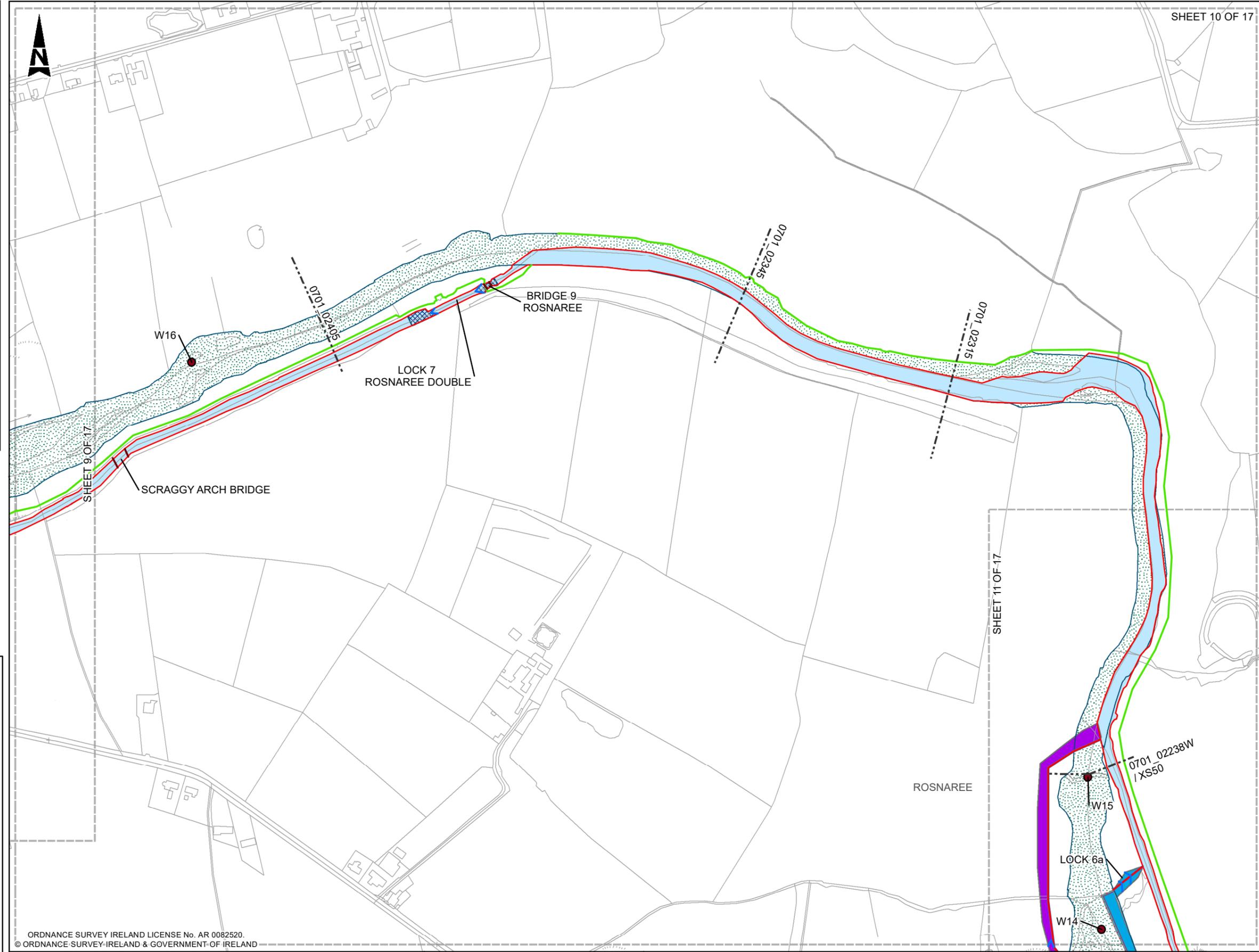
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Drawing Number  
**5197347 / HTR / GIS / 9**

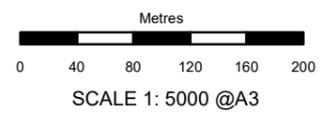
Rev  
**P01**

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SHEET 10 OF 17



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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Client  
**MEATH COUNTY COUNCIL**

Project  
**BOYNE GREENWAY  
AND NAVIGATION RESTORATION**

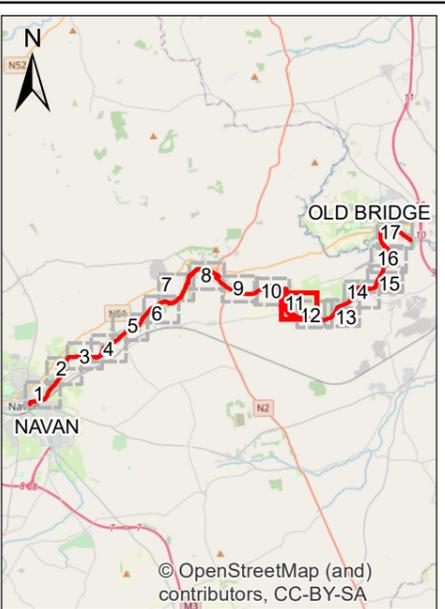
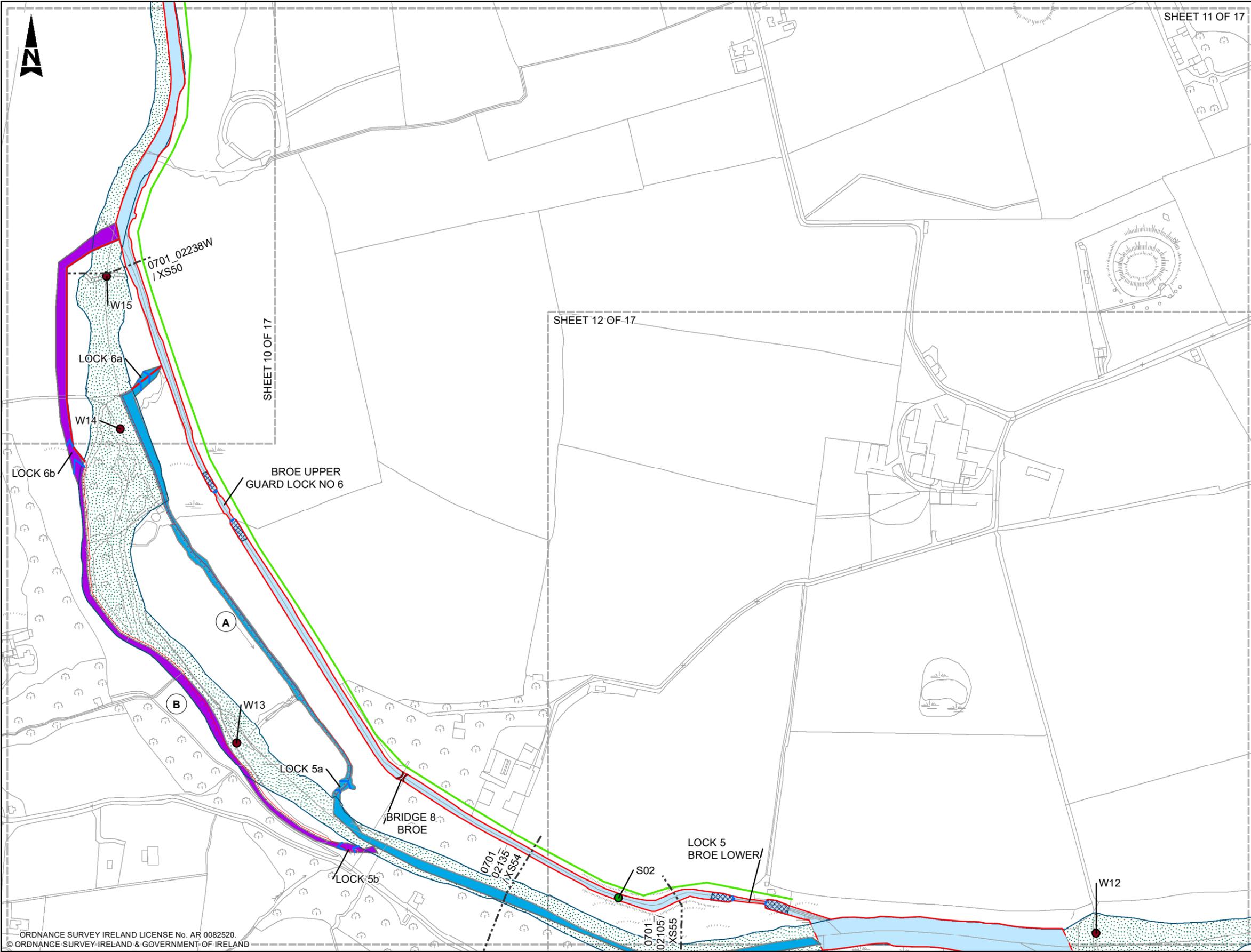
Purpose  
**INFORMATION**

Title  
**CANAL OVERVIEW  
SHEET 10 OF 17**

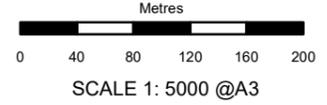
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**P01**

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- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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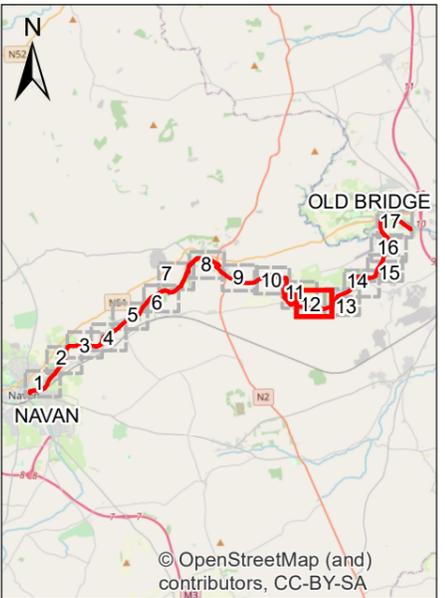
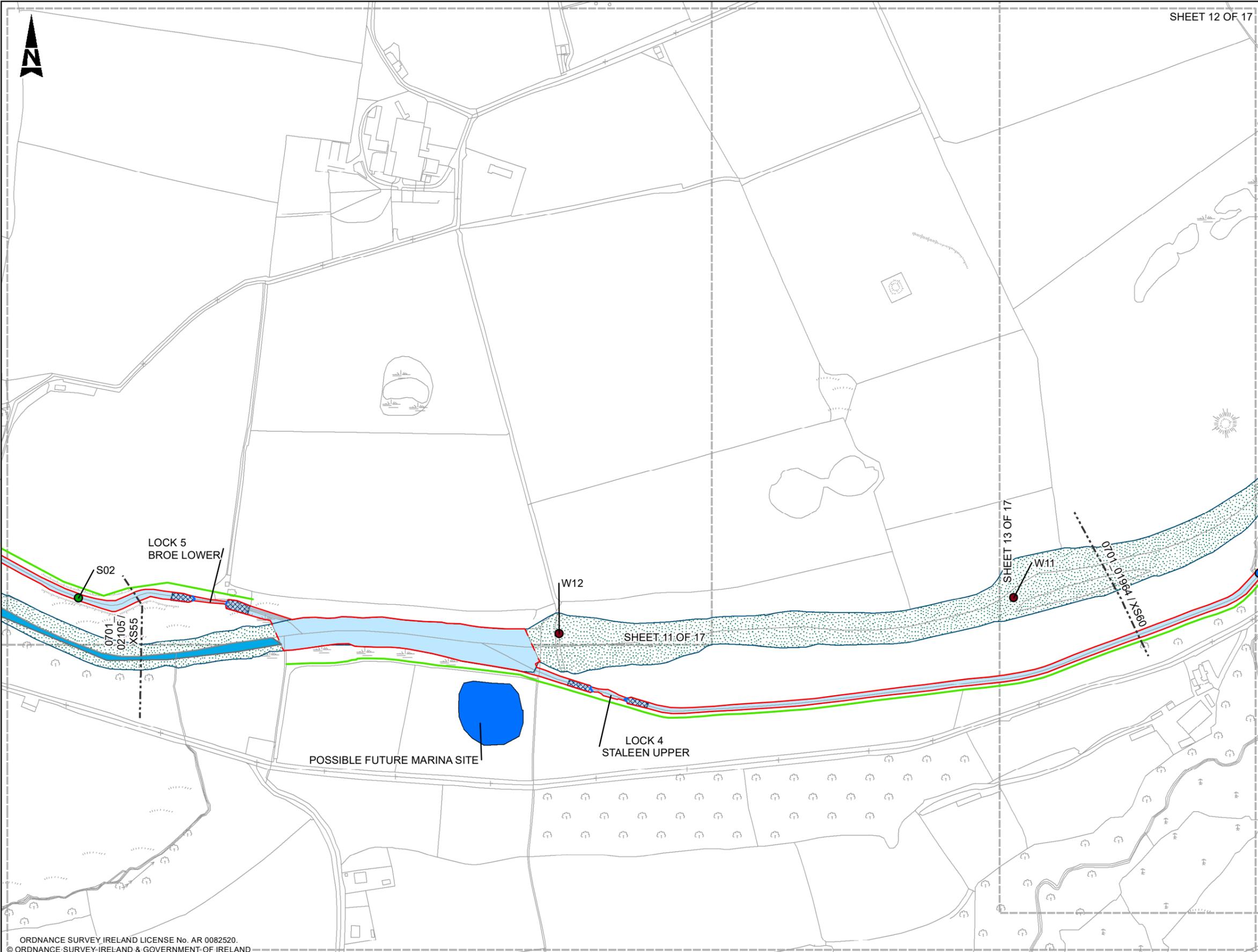
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Project  
**BOYNE GREENWAY  
AND NAVIGATION RESTORATION**

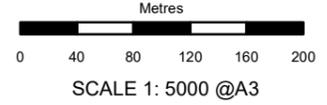
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					Rev <b>P01</b>

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SHEET 12 OF 17



- LEGEND**
- BOYNE SCHEME DREDGING EXTENTS
  - BOYNE SCHEME DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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Project  
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AND NAVIGATION RESTORATION**

Purpose  
**INFORMATION**

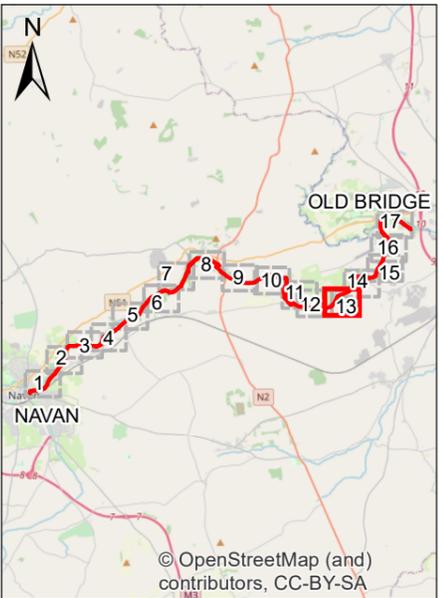
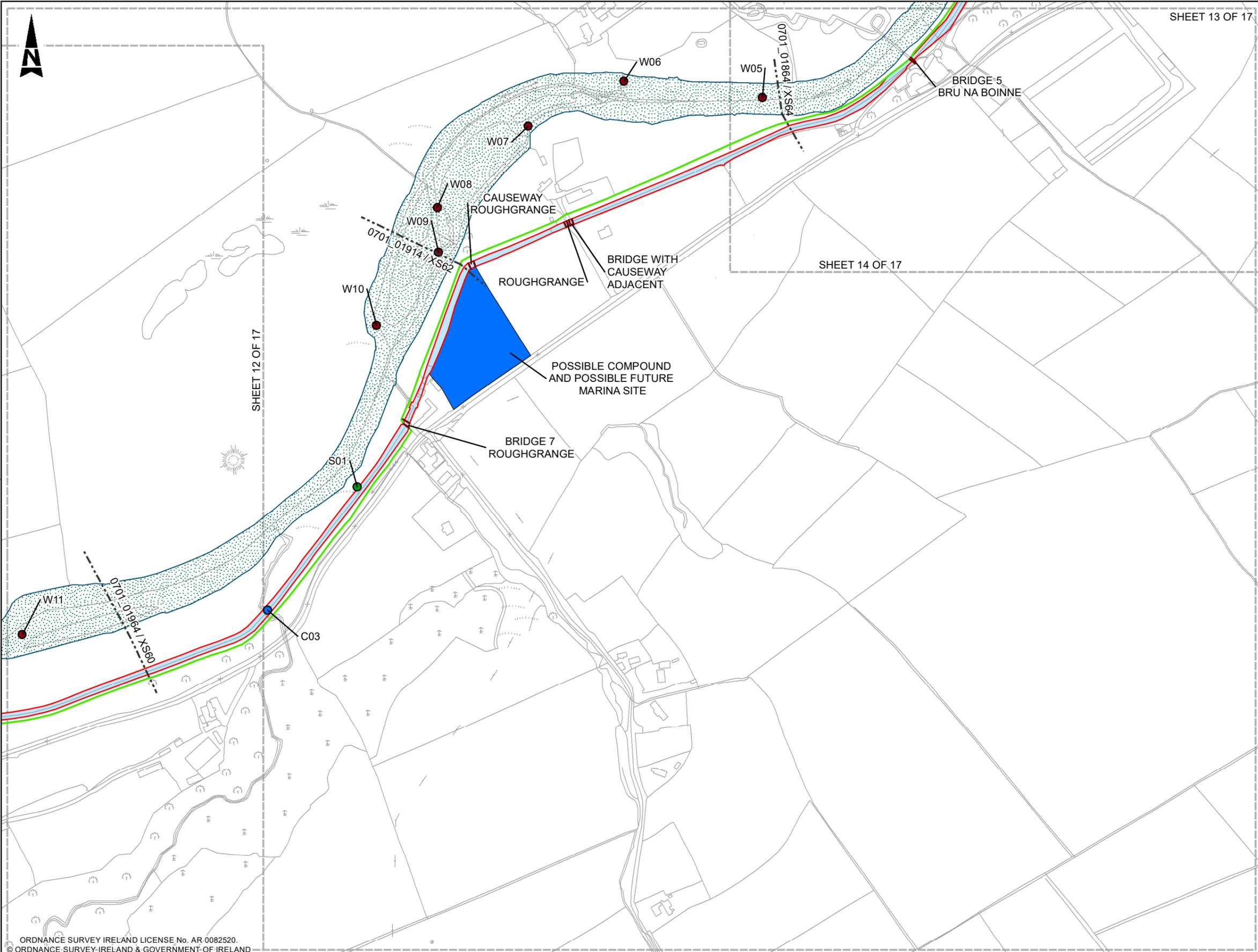
Title  
**CANAL OVERVIEW  
SHEET 12 OF 17**

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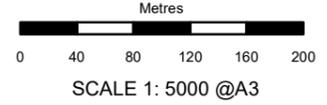
Rev  
**P01**

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A3

SHEET 13 OF 17



- LEGEND**
- BOYNE SCHEME DREDGING EXTENTS
  - BOYNE SCHEME DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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Client: MEATH COUNTY COUNCIL

Project: BOYNE GREENWAY AND NAVIGATION RESTORATION

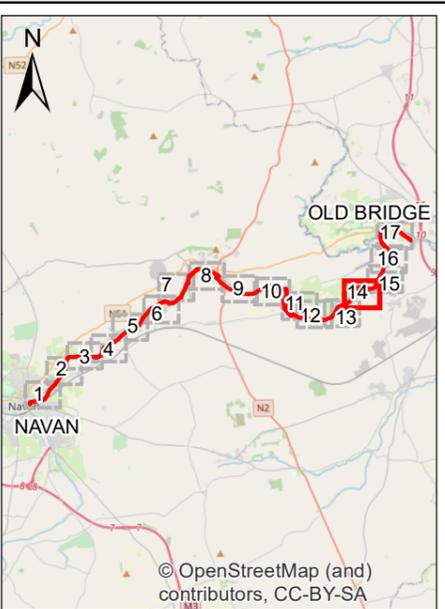
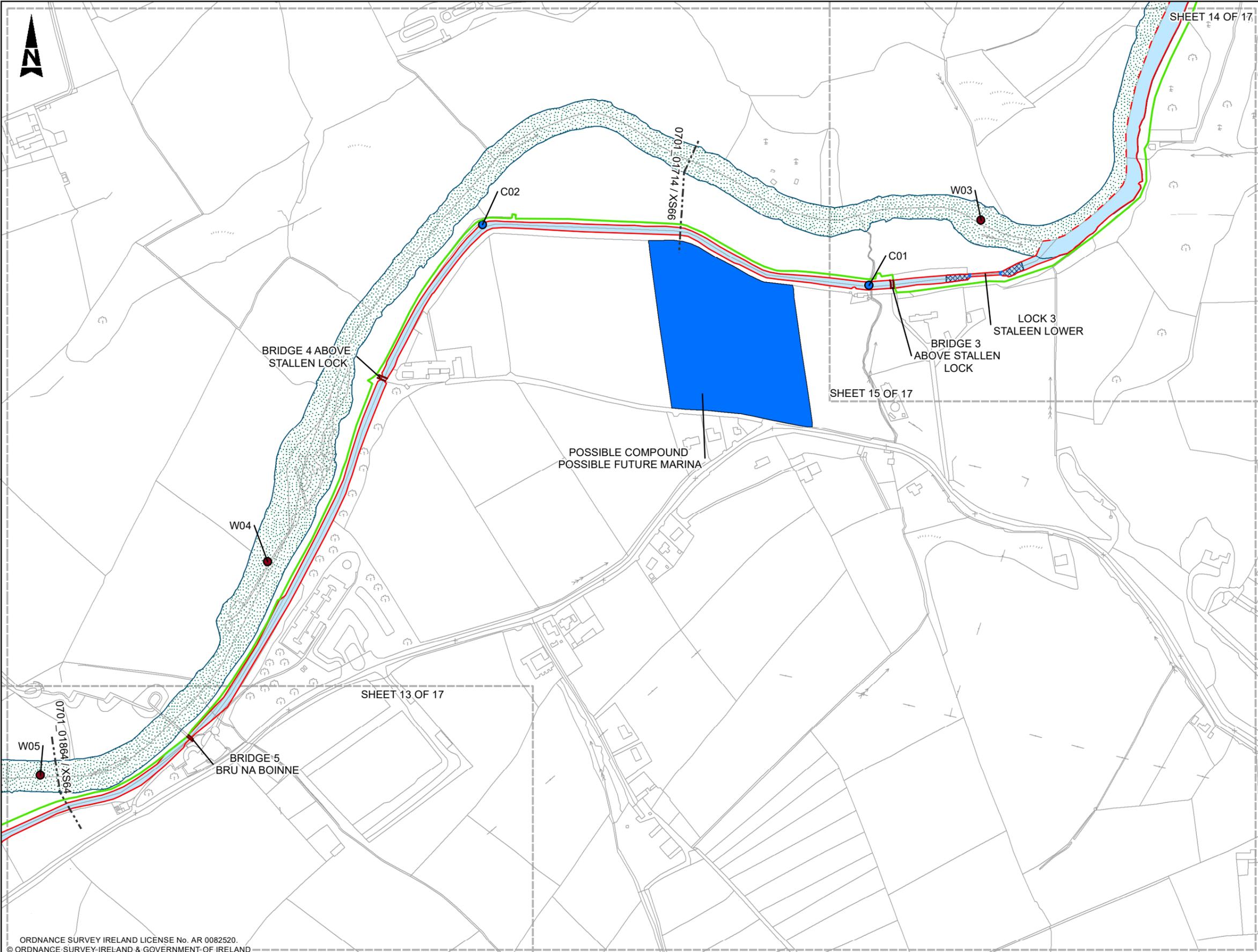
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Title: CANAL OVERVIEW SHEET 13 OF 17

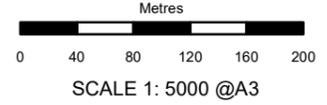
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Rev: P01

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- LEGEND**
- BOYNE SCHEME DREDGING EXTENTS
  - BOYNE SCHEME DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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Client  
**MEATH COUNTY COUNCIL**

Project  
**BOYNE GREENWAY  
AND NAVIGATION RESTORATION**

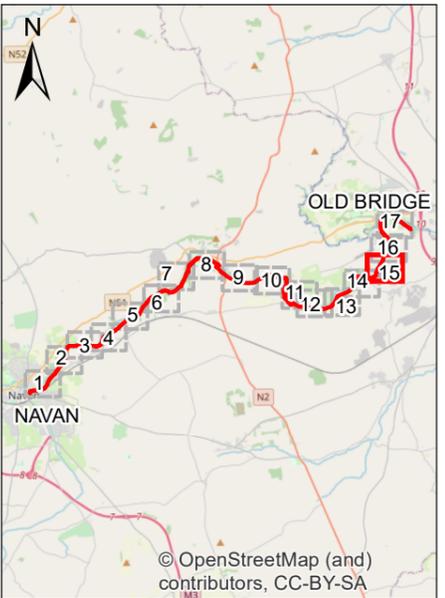
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**CANAL OVERVIEW  
SHEET 14 OF 17**

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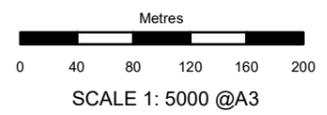
Rev  
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SHEET 15 OF 17



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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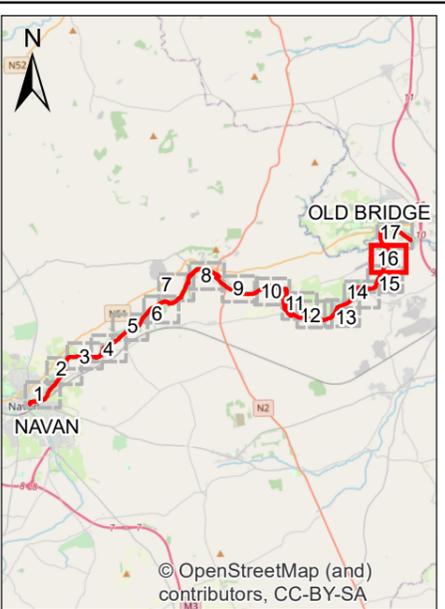
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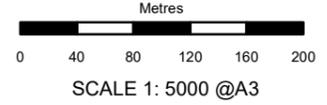
Client	MEATH COUNTY COUNCIL
Project	BOYNE GREENWAY AND NAVIGATION RESTORATION

Purpose	INFORMATION			
Title	CANAL OVERVIEW SHEET 15 OF 17			
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Drawing Number	5197347 / HTR / GIS / 15			Rev
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- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
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  - OPTION A CANAL USES EXISTING LEAT
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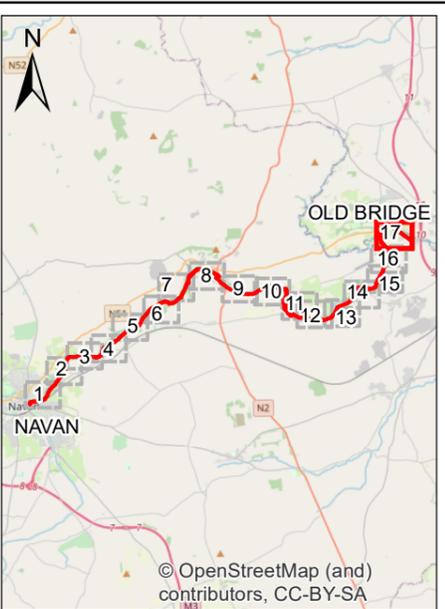
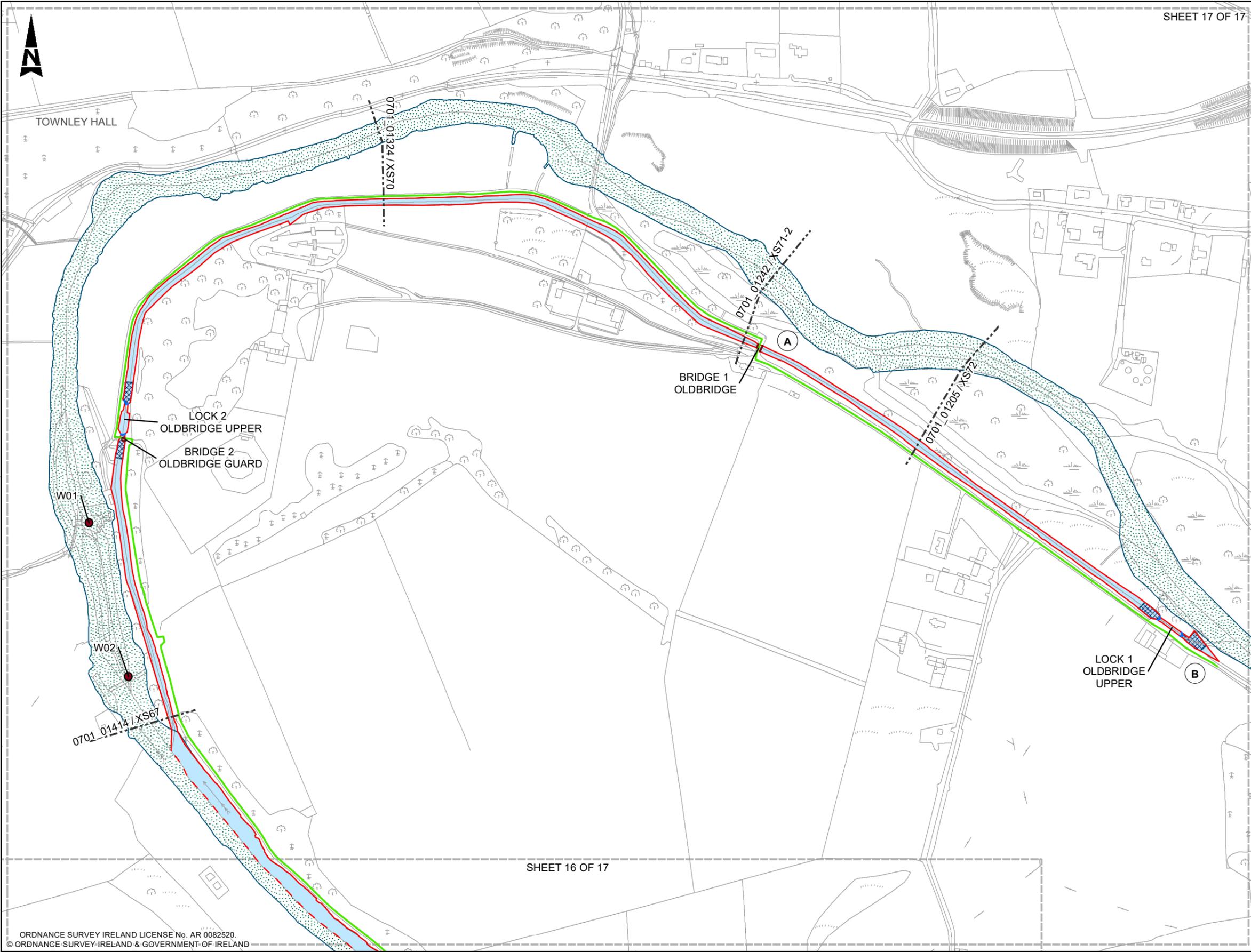
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Project	BOYNE GREENWAY AND NAVIGATION RESTORATION

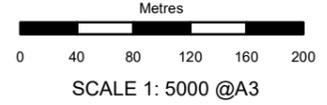
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Drawing Number	5197347 / HTR / GIS / 16			Rev
				P01

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A3

SHEET 17 OF 17



- LEGEND**
- BOYNE SCHEME\DREDGING EXTENTS
  - BOYNE SCHEME\DREDGING EXTENTS\_HALFWIDTH CHANNEL
  - NEW CANAL IS NEEDED
  - CANAL PROPOSED ROUTE
  - SLIPWAYS
  - CULVERTS
  - SLUICES
  - WEIRS
  - DEMOLISHED LOCK GATES
  - HISTORIC TOWPATH
  - HISTORIC TOWPATH (CONNECTING ROUTE BETWEEN TOWPATH SECTIONS)
  - BRIDGE LOCATIONS
  - LOCK GATES LOCATIONS
  - CROSS SECTIONS LOCATIONS
  - SCHEME EXTENTS
  - LOCK LANDING (30m)
  - COMPOUND AREA
  - OPTION A CANAL USES EXISTING LEAT
  - OPTION B CANAL USES HISTORIC LEAT
  - BOYNE RIVER EXTENTS



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Project  
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AND NAVIGATION RESTORATION**

Purpose  
**INFORMATION**

Title  
**CANAL OVERVIEW  
SHEET 17 OF 17**

Sheet Size <b>A3</b>	Original Scale 1:5,000	Designed / Drawn SR	Checked PM	Authorised DBF
Drawing Number <b>5197347 / HTR / GIS / 17</b>		Date 06/08/21	Date 06/08/21	Date 06/08/21

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