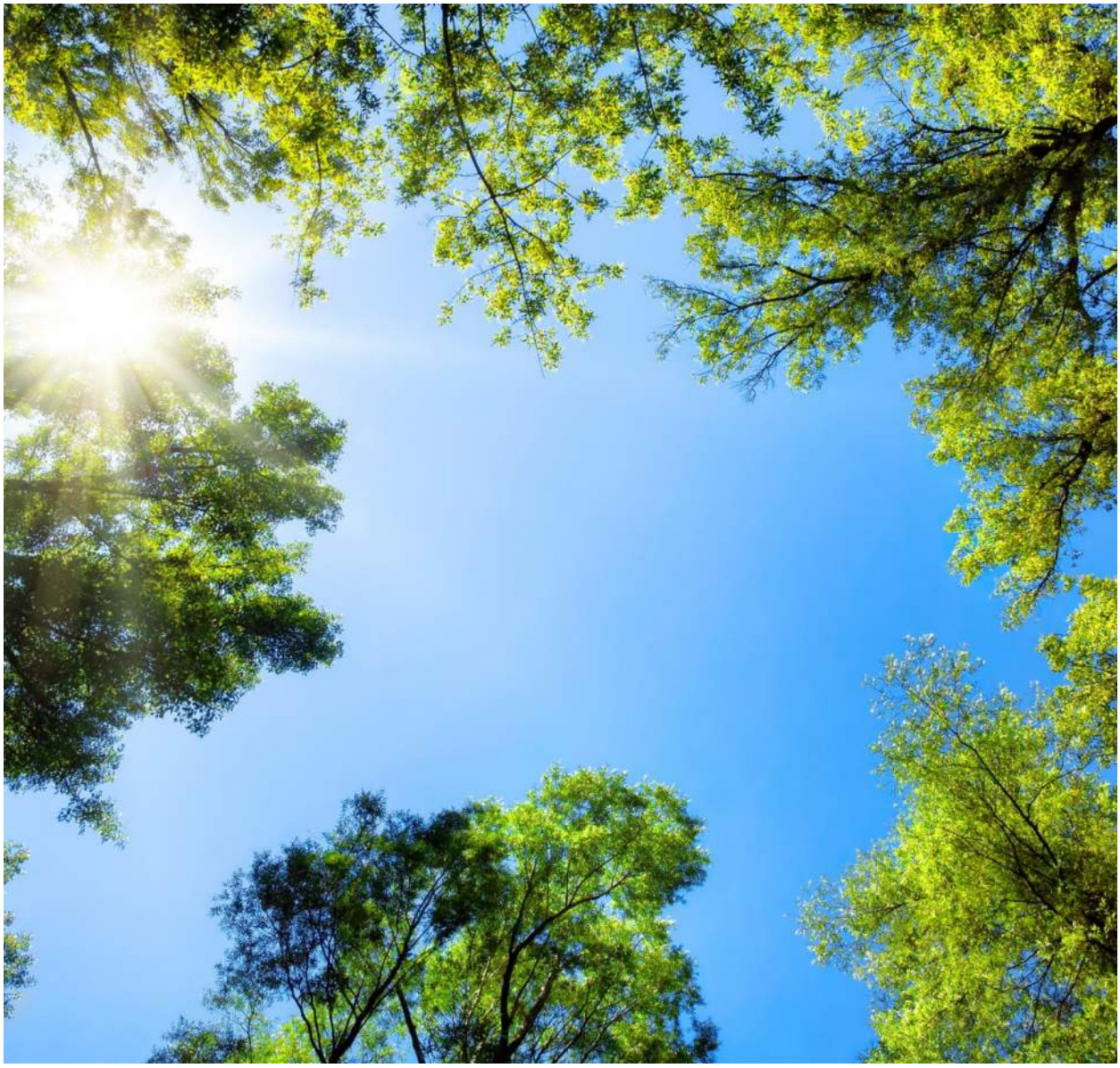

Mull Education Campus

Site Options Review – Flooding and Drainage

13 November 2024

Waterman Infrastructure & Environment Ltd
8 Nelson Mandela Place, Glasgow, G2 1BT
www.watermangroup.com

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Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Revision	Status	Date	Prepared by	Checked by	Approved by
P1.0	S3	23/11/2024	Luke Balfour	David Manson	David Manson

Comments

Revision		Status	
P*nn*	Preliminary (shared; non-contractual)	S1	Coordination
C*nn*	Contractual	S2	Information
		S3	Review & Comment
		S4	Review & Authorise
		S5	Review & Acceptance
		A0, A1, A*n*	Authorised & Accepted (*n*=work stage if applicable)

Disclaimer

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We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

Contents

Appendices

1. Introduction

Waterman Infrastructure & Environment Ltd (WIE) has been commissioned by Hub North Scotland Limited to undertake a Technical Appraisal of four sites being considered for a new Education Campus on the Isle of Mull.

The four sites being considered are:

- Site 1 – Existing Tobermory School
- Site 2 – Craignure
- Site 3 - Garmony
- Site 4 – South Tobermory

This high-level appraisal has been undertaken to help inform site selection. The findings of this appraisal will be considered with the other relevant criteria to establish a preferred site for the proposed Education Campus.

The observations in this appraisal have been made without the benefit of topographic surveys of any of the four potential development sites. Detailed topographic survey of the sites and detailed information of the existing drainage infrastructure is required to confirm a suitable drainage strategy. The comments provide in this report and therefore high-level observations based on the currently available information.

Scottish Water has not been consulted during the preparation of this appraisal.

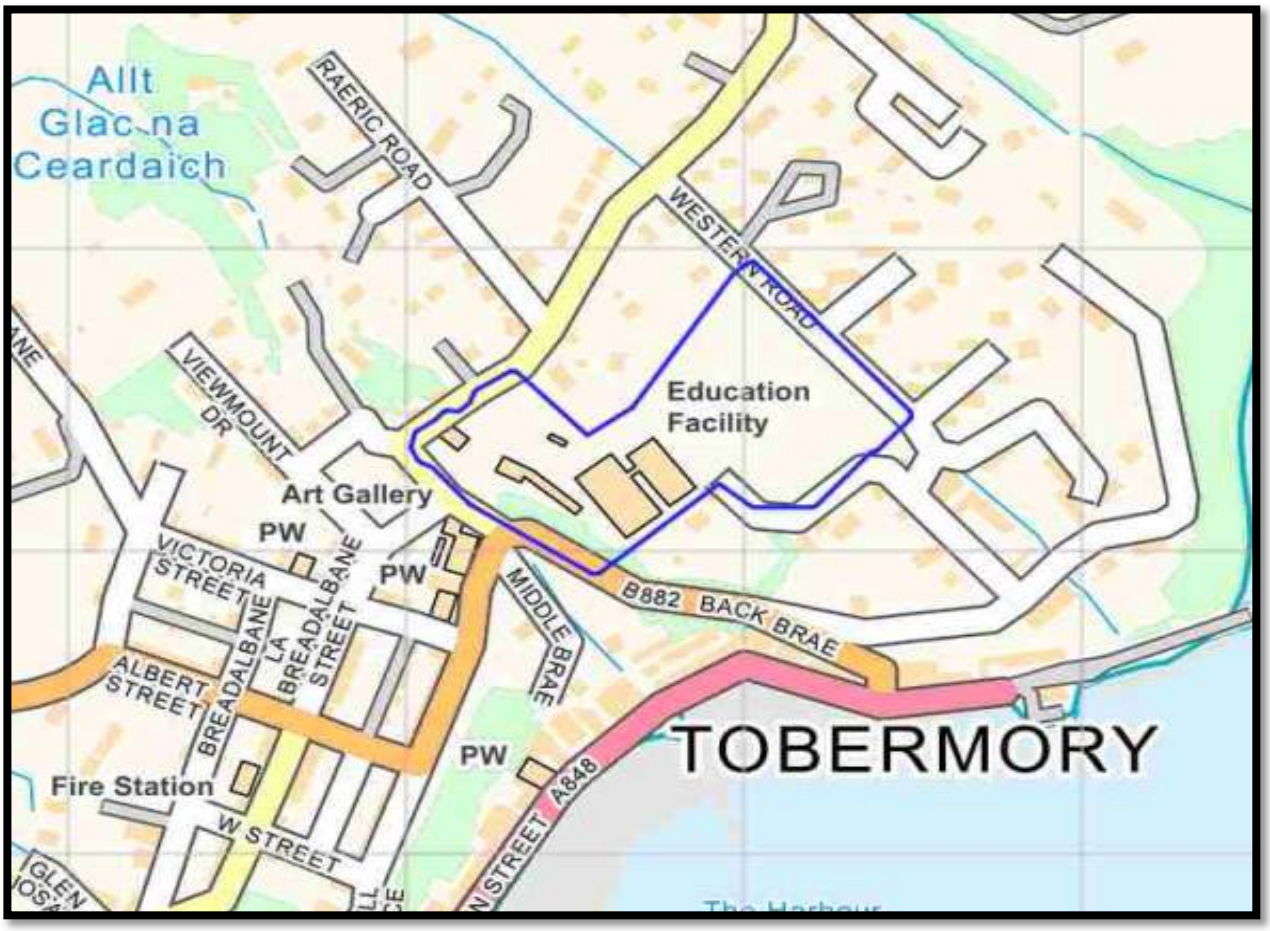
2. Site 1 – Existing Tobermory School

2.1 Site Description

The Existing Tobermory School Site (Site) 1 is located on the northeastern coast of the Isle of Mull within the existing Tobermory High School site and can be centred by approximate grid reference (NGR E:150558, N:755478). Site 1 is asymmetrical irregular hexagon in shaped plot of approximately 2.3ha.

A Site walkover indicated Site 1's topography generally slopes from north to south, with significant level changes throughout the Site, most notably the eastern Site edge drops markedly towards the children's playpark. Furthermore, access to the school from the car park would present challenges given the change in level across the Site. It has been noted that due to the extremely narrow road network surrounding Site 1, plant access during construction and bus and parent drop-offs and servicing arrangements post construction is foreseen to be challenging. The current main access route to the existing school Site is envisaged to remain as is.

Figure 1: Site 1 Location Plan



2.2 Flooding

The SEPA flood map (Appendix A) indicates that Site 1 is not impacted by flooding from high tides or storm surges, or from fluvial flooding from nearby watercourses.

Overland or sheet flow can occur when intense rainfall exceeds the ground's infiltration capacity, particularly when the ground is saturated or impermeable. The site may be at risk of pluvial flooding if it lies between an upstream catchment and a natural drainage channel. Flooding from overland flow is more likely in areas where the surrounding topography causes water to accumulate.

The SEPA Flood Map show Site 1 is at "low to no" risk of surface water flooding. The proposed development should incorporate measures for effective surface water management. Specifically, it is essential to intercept, treat, and attenuate surface water before it is discharged in a controlled manner through a new on-site drainage network. Implementing these measures will ensure compliance with local council policy and contribute to effective flood risk management and water quality protection.

This appraisal does not consider potential flooding from water supply infrastructure (e.g., mains or associated networks).

2.3 Scottish Water Infrastructure

2.3.1 Water Supply

The Scottish Water infrastructure layout plan of the site is included in Appendix B.

The available Scottish Water infrastructure records indicate that Site 1 is currently served by a 3-inch uPVC water main that cuts through the northwestern part of the site. A 4-inch uPVC water main is also located at a similar location.

Proposed development does not appear to affect water main location but would need to be investigated further once plans are developed further and notification issued to Scottish Water for their view.

2.3.2 Waste Water Drainage

Scottish Water's infrastructure records indicate that a 228mm diameter vitrified clay combined sewer is located on Erray Road to the north, the likely location of an existing connection to the public sewer network. A 152mm diameter combined sewer is also location on Western Road at its eastern boundary.

Scottish Water would need to confirm in a Pre-Development Enquiry response that there is sufficient capacity in their network to service the development of a new Education Campus. This can be offset by understanding what the current flow rate from the existing school provides.

2.3.3 Surface Water Drainage / SuDS

There is no public surface water drainage shown on the Scottish Water infrastructure records within the boundaries of the site. There are also no watercourses in the vicinity of the site which surface water runoff could be discharged to. It is therefore considered that the surface water runoff from the existing school facility must be conveyed to the existing public combined sewer network or drained into soakaways or to a combination of these drainage options.

Scottish Water will only allow surface water from new development to discharge to the combined sewer network under exceptional circumstances. It is therefore not expected that surface water runoff from any redevelopment of the site will be permitted to be conveyed to the existing combined sewer network.

However, if the site currently benefits from a surface water connection to the combined sewer and it can be shown that the amount of hardstanding has not been increased and is attenuated, a connection to the combined sewer may be possible. They may also require use of raingardens/bio retention zones and green roofs to be appropriately considered as well as potential for rainwater harvesting.

The investigations that are required to establish if surface water runoff from proposed development can be infiltrated into the subsoils will comprise intrusive ground investigation and insitu testing to determine the suitability of the ground conditions.

The appropriate form of SUDS for redevelopment of the site will depend on the method of surface water disposal. Irrespective of the actual form of the SUDS, a significant proportion of the lowest lying area of the site will require to be allocated for the SUDS and this will place a constraint the development proposals.

3. Site 2 - Craignure

3.1 Site Description

The Craignure site (Site 2) is located on the southeastern coast of the Isle of Mull to the immediate southwest of the current Mull and Iona Community Hospital complex and can be centred by approximate grid reference (NGR E:171142, N:738102). The site is roughly rectangular in shape of approximately 3.75ha with potential expansion to 5ha and has been identified by Ryder Architecture Ltd ('Ryder') to have sufficient capacity to accommodate the new Mull Campus building.

A Site walkover indicated that Site 2 has a gradual but significant fall from the southeast to the northwest and is bound at the northern corner by a steep level change which rises to higher ground at the north. The nature of the fall across Site 2 would not present a significant issue in developing the new campus.

Site 2 would require a new access route to service the campus development that is envisaged to come from either the east as part of the new access route being developed for the residential scheme or from the southwest corner to serve the campus directly. Topography will impact on any potential new access road formed from the west however, as the A848 is at a significantly higher level than the adjacent part of the site. Ensuring appropriate gradients for any new route is a key consideration.

Figure 2: Site 2 Location Plan

3.2 Flooding

The SEPA flood map (Appendix A) indicates that Site 2 is not impacted by flooding from high tides or storm surges.

Overland or sheet flow can occur when intense rainfall exceeds the ground's infiltration capacity, particularly when the ground is saturated or impermeable. The site may be at risk of pluvial flooding if it lies between an upstream catchment and a natural drainage channel. Flooding from overland flow is more likely in areas where the surrounding topography causes water to accumulate.

The SEPA Flood Map show medium to high risks around the Site 2, but the Site boundary is at "low to no" risk of surface water flooding. The proposed development should incorporate measures for effective surface water management. Specifically, it is essential to intercept, treat, and attenuate surface water before it is discharged in a controlled manner through a new on-site drainage network. Implementing these measures will ensure compliance with local council policy and contribute to effective flood risk management and water quality protection.

This appraisal does not consider potential flooding from water supply infrastructure (e.g., mains or associated networks).

3.3 Scottish Water Infrastructure

3.3.1 Water Supply

The Scottish Water infrastructure layout plan of the site is included in Appendix B.

The available Scottish Water infrastructure records indicate that Site 2 could be served by either the 160mm diameter High Pressure Water Main or the 63mm diameter MDPE water main located within the A849 where a new junction would be formed.

This new junction could potentially impact on these water mains as they appear to be located on the eastern verge where a new junction would be formed. As the water mains are in a verge, it is possible that they would not be at the required depth below a new road and may need to be deepened locally to suit.

3.3.2 Waste Water Drainage

Scottish Water's infrastructure records indicate that the nearest location for wastewater disposal is located in the adjacent housing development in Java Place with 100mm diameter uPVC combined sewers discharging towards coastal waters.

Scottish Water would need to confirm in a Pre-Development Enquiry response that there is sufficient capacity in their network to service the development of a new Education Campus.

It should be noted that off site improvement works may be required to facilitate a connection to the Scottish Water network but depending on timing, this work may be carried out as part of any planned housing development surrounding the Site. Placement of carrier drains through adjacent land would need to be considered so that it does not cause issues for future development if School site is developed in advance of any housing development.

3.3.3 Surface Water Drainage / SuDS

There is no public surface water drainage shown on the Scottish Water infrastructure records within the boundaries of the site. There are also no watercourses in the vicinity of the site which surface water runoff could be discharged to.

Scottish Water will only allow surface water from new development to discharge to the combined sewer network under exceptional circumstances. It is therefore not expected that surface water runoff from any redevelopment of the site will be permitted to be conveyed to the existing combined sewer network. A new surface water connection through Java place towards the existing outfall may be considered but again, depending on timing, a surface water connection may have been made by any planned housing development.

It should be noted that no records are available for the Mull and Iona Community Hospital surface water discharge and can be assumed that this infiltrates to the ground. Therefore, an appropriate method for treating and disposing of surface water from a new facility on the site would need to be established. Further investigation and consultations are required to establish the feasibility of these options.

The investigations that are required to establish if surface water runoff from proposed development can be infiltrated into the subsoils will comprise intrusive ground investigation and insitu testing to determine the suitability of the ground conditions. The requirement to infiltrate surface water runoff to the subsoils will be dependent on Scottish Water permission to discharge surface water to the existing sewers and the rate of any allowance.

The appropriate form of SUDS for redevelopment of the site will depend on the method of surface water disposal. Irrespective of the actual form of the SUDS, a significant proportion of the lowest lying area of the site will require to be allocated for the SUDS and this will place a constraint the development proposals.

4. Site 3 - Garmony

4.1 Site Description

The Garmony site (Site 3) is located on the southeastern coast of the Isle of Mull along the eastern boundary of the A849 and can be centred by approximate grid reference (NGR E:167641, N:739888). Site 3 is roughly square in shape, with the northern extents of the Site 3 boundary following a similar shape to the adjacent Allt Achadh na Moine watercourse and is approximately 9ha.

A Site walkover indicated the topography on-site is generally level, however, rises significantly to the west including a knoll of higher ground within the northwestern corner. It is envisaged that access to Site 3 would be gained through a significant upgrade of the existing access road originating from the A849.

Figure 3: Site 3 Location Plan

4.2 Flooding

The SEPA flood map (Appendix A) indicates that Site 3 is not impacted by flooding from high tides or storm surges but is impacted on its northern boundary by fluvial flooding from the watercourse that bounds the northern boundary.

It will be necessary to assess the 1:200-year flood event including an appropriate allowance for climate change. No development will be permitted within the flood plain other than landscaped features that do not alter the existing levels and affect flood plain storage.

Proposed school buildings sit out with indicative flood extents but Flood Risk Assessment with modelling of watercourse would be required to confirm site constrains for school buildings and the finished floor level.

4.3 Scottish Water Infrastructure

4.3.1 Water Supply

The Scottish Water infrastructure layout plan of the site is included in Appendix B.

The available Scottish Water infrastructure records indicate that Site 3 could be served by the 160mm diameter High Pressure Water Main located within the A849 where a new junction would be formed.

This new junction should not affect the water mains as they appear to be located on the eastern verge, same as Site 2, however the new junction for Site 3 would be formed on the western verge.

4.3.2 Waste Water Drainage

Scottish Water's infrastructure records indicate that there are no public sewers nearby for waste water disposal.

Wastewater generated by the school would need to be treated at source via a reed bed, or other treatment process, prior to discharge into the watercourse, subject to SEPA approval.

Suitable space within the red line boundary of the development would need to be provided for this treatment but is not expected to be an issue.

4.3.3 Surface Water Drainage / SuDS

There is no public surface water drainage shown on the Scottish Water infrastructure records within the boundaries of the site. However, there is a watercourse in the vicinity of the site which surface water runoff could be discharged to.

The appropriate form of SUDS for redevelopment of the site will depend on the method of surface water disposal. Irrespective of the actual form of the SUDS, a significant proportion of the lowest lying area of the site will require to be allocated for the SUDS and this will place a constraint the development proposals.

SEPA approval would not be required for disposal of surface water to the watercourse if drainage complies with their General Binding Rules. A non-return valve would need to be included to restrict flood waters entering the drainage system with overland flood routes considered to ensure surcharging of drainage network during flood event does not pose a risk to school building.

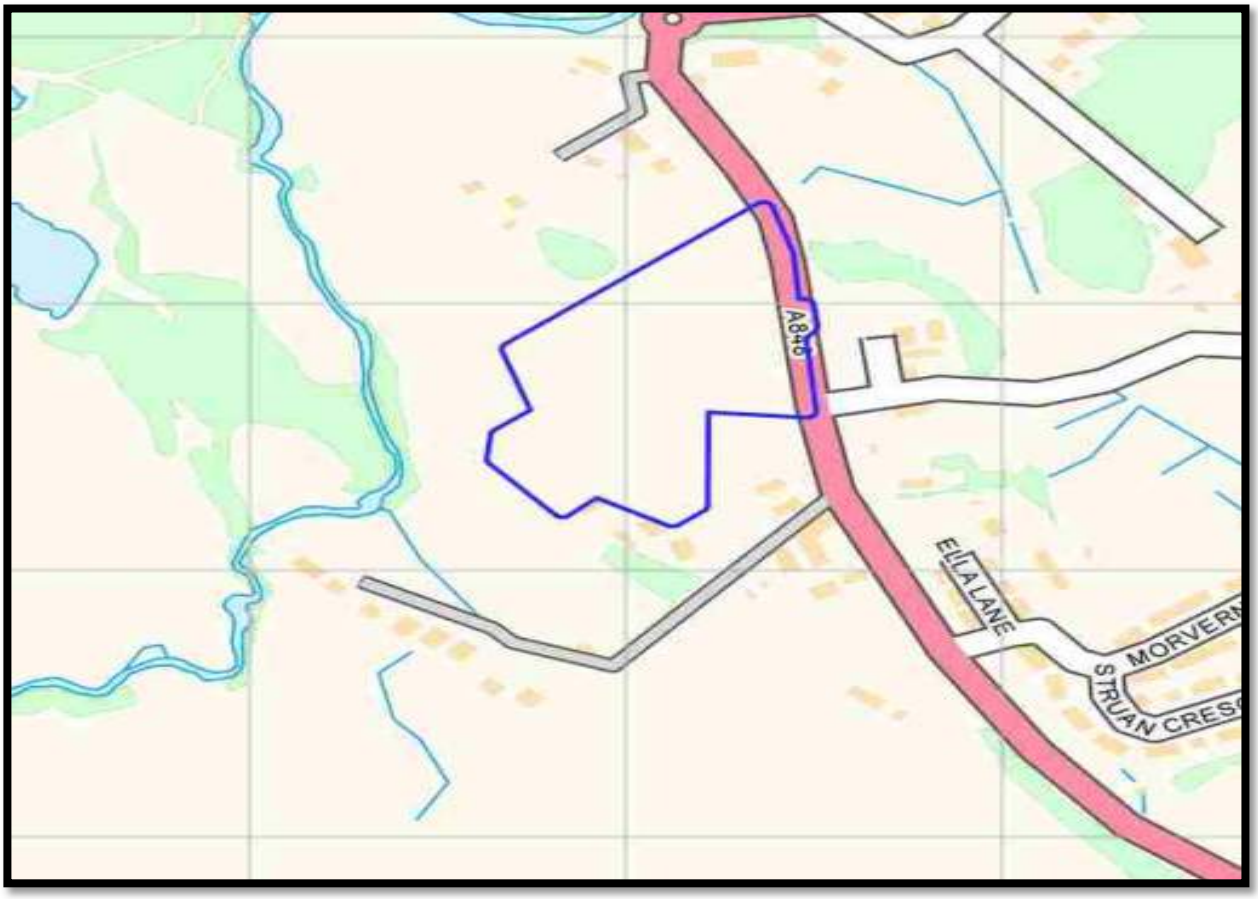
5. Site 4 – South Tobermory

5.1 Site Description

The South Tobermory (Site 4) is located on the northeastern coast of the Isle of Mull, to the south of the town of Tobermory along the western boundary of the A848 and can be centred by approximate grid reference (NGR E:150217, N:754547). Site 4 is an asymmetrical irregular polygon shaped plot of land of approximately 1.6 ha.

A Site walkover indicates the topography of Site 4 generally slopes down significantly towards the east however also slopes to the west towards the western site boundary. It is envisaged site access would be gained directly from the A848 due to its proximity to the eastern site boundary.

Figure 4: Site 4 Location Plan



5.2 Flooding

The SEPA flood map (Appendix A) indicates that Site 4 is not impacted by flooding from high tides or storm surges but fluvial flooding is noted from the watercourse near its western boundary, but flooding does not enter Site.

Proposed school buildings sit out with indicative flood extents but a Flood Risk Assessment with modelling of watercourse will likely be required from planning to confirm site constrains for school buildings and the finished floor level.

It will be necessary to assess the 1:200-year flood event including an appropriate allowance for climate change.

5.3 Scottish Water Infrastructure

5.3.1 Water Supply

The Scottish Water infrastructure layout plan of the site is included in Appendix B.

The available Scottish Water infrastructure records indicate that Site 4 could be served by either the 125mm diameter High Pressure Water Main or the 90mm diameter MDPE water main located within the A848 where a new junction would be formed.

This new junction could potentially impact on these water mains as they appear to be located on the western verge where a new junction would be formed. As the water mains are in a verge, it is possible that they would not be at the required depth below a new road and may need to be deepened locally to suit.

5.3.2 Waste Water Drainage

Scottish Water's infrastructure records indicate that there are public sewers nearby for wastewater disposal.

Wastewater generated by the school would connect to the foul sewer located within the grass verge between the A848 and Meadhonish cottage.

A Pre-Development Enquiry (PDE) would need to be submitted to Scottish Water to ensure capacity is available within their network to allow a connection from the proposed school campus.

5.3.3 Surface Water Drainage / SuDS

There is an existing public surface water sewer shown on the Scottish Water infrastructure records located within the grass verge between the A848 and Meadhonish cottage.

A Pre-Development Enquiry (PDE) would need to be submitted to Scottish Water to ensure capacity is available within their network to allow a connection from the proposed school campus and what limit surface water would be restricted to.

Alternatively, surface water could discharge to the Tobermory River, SEPA approval would not be required for disposal of surface water to the watercourse if drainage complies with their General Binding Rules. A non-return valve would need to be included to restrict flood waters entering the drainage system with overland flood routes considered to ensure surcharging of drainage network during flood event does not pose a risk to school building.

The 3G pitch location shown off site in Ryder's plans for Site 4 shows drainage within these fields but are not shown on SEPAs mapping as they do not attract a large enough catchment to be shown on the flood maps.

These would be classed as a minor watercourses and although we would require a CAR license to divert the drainage, with the space available, these could be naturalised and meander round the pitch and would be looked upon favourably.

This re-alignment of the watercourse would attract additional costs but could be offset by savings to retaining walls, etc within the main site.

The appropriate form of SUDS for redevelopment of the site will depend on the method of surface water disposal. Irrespective of the actual form of the SUDS, a significant proportion of the lowest lying area of the site will require to be allocated for the SUDS and this will place a constraint the development proposals.

6. Constraints and Risks

The greatest constraint and risk to development on the sites is the disposal of surface water runoff.

Scottish Water has not been consulted during the preparation of this appraisal. Scottish Water will traditionally only allow surface water from new developments to discharge to a combined sewer network under exceptional circumstances. It is therefore not expected that surface water runoff from any redevelopment of the sites will be permitted to be conveyed to any existing combined sewer network.

An argument could be made for the existing school site if impermeable areas do not increase from existing site to new development. It is likely that they will ask for an assessment in use of rainwater harvesting, infiltration to ground and use of green roofs, bio retention areas prior to any approval.

Further consultation with Scottish Water will be required to establish if it is feasible to discharge surface water runoff to the existing surface water sewer networks and investigation of the existing sewers will be required to establish if a gravity connection is achievable at any of the sites.

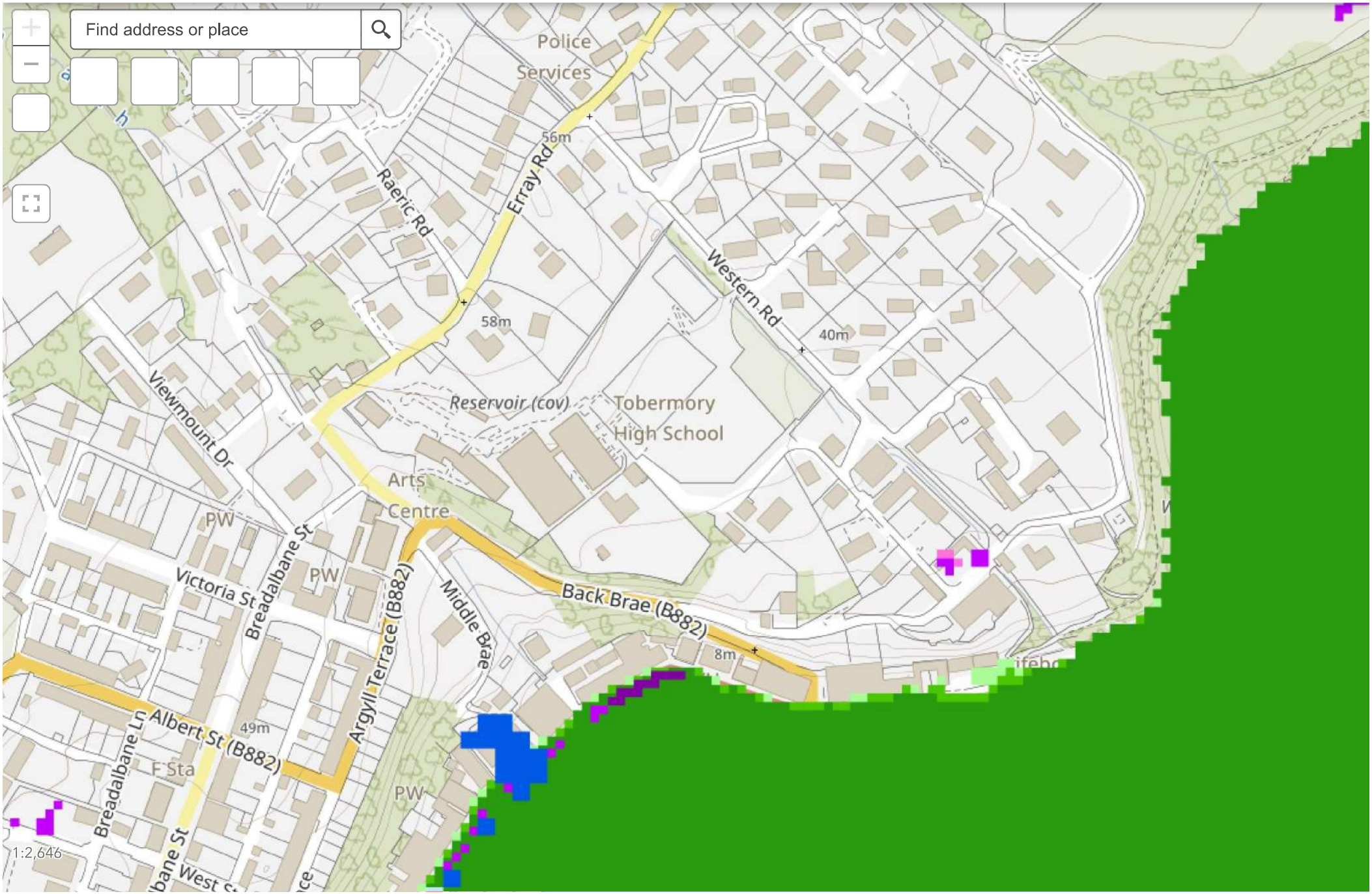
Detailed topographic survey of the sites and a ground investigation would be required to inform and validate the design of an appropriate drainage strategy.

Appendices

A. SEPA Flood Mapping

SEPA Flood Maps

Terms and Conditions Map Help

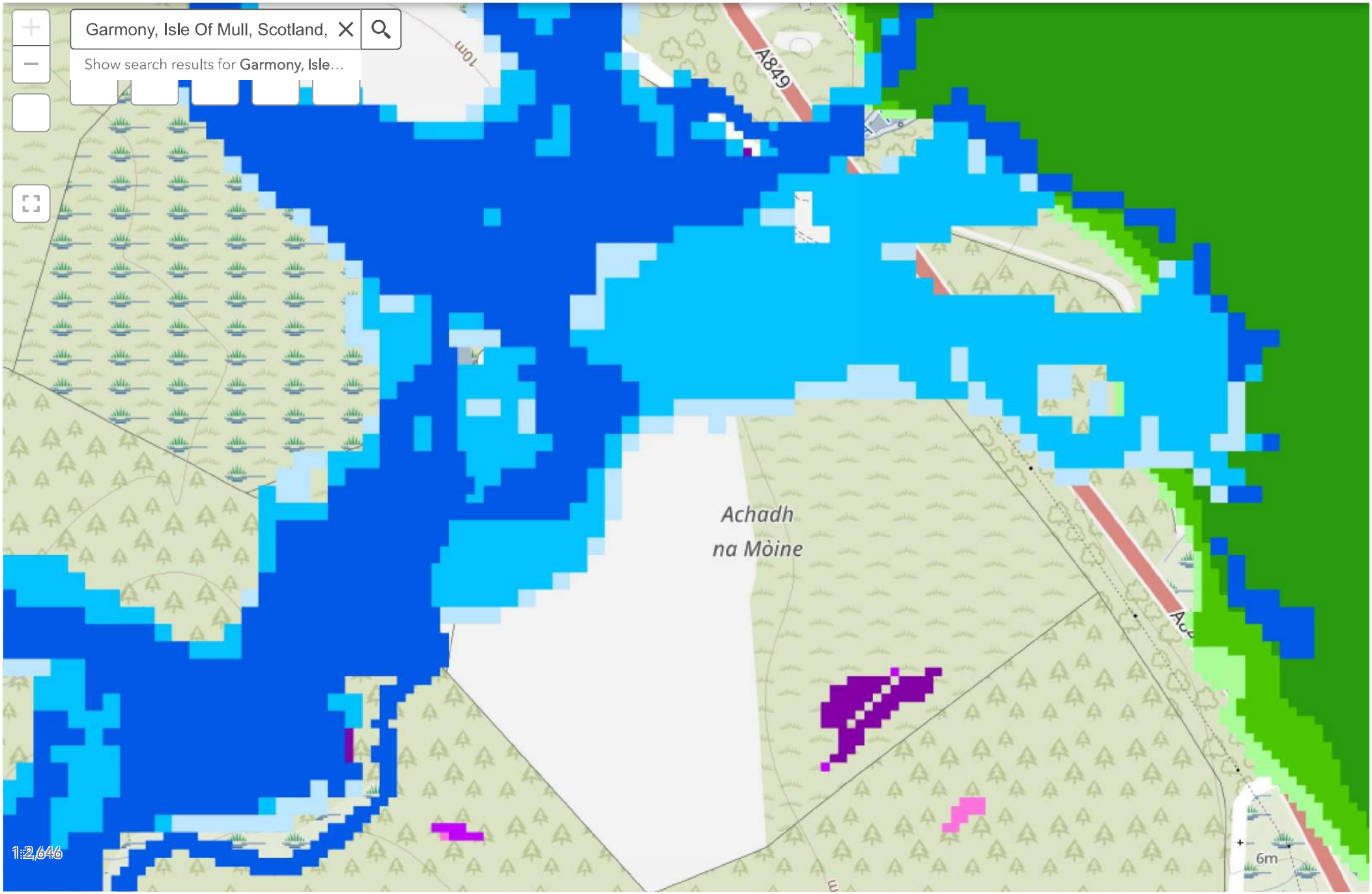


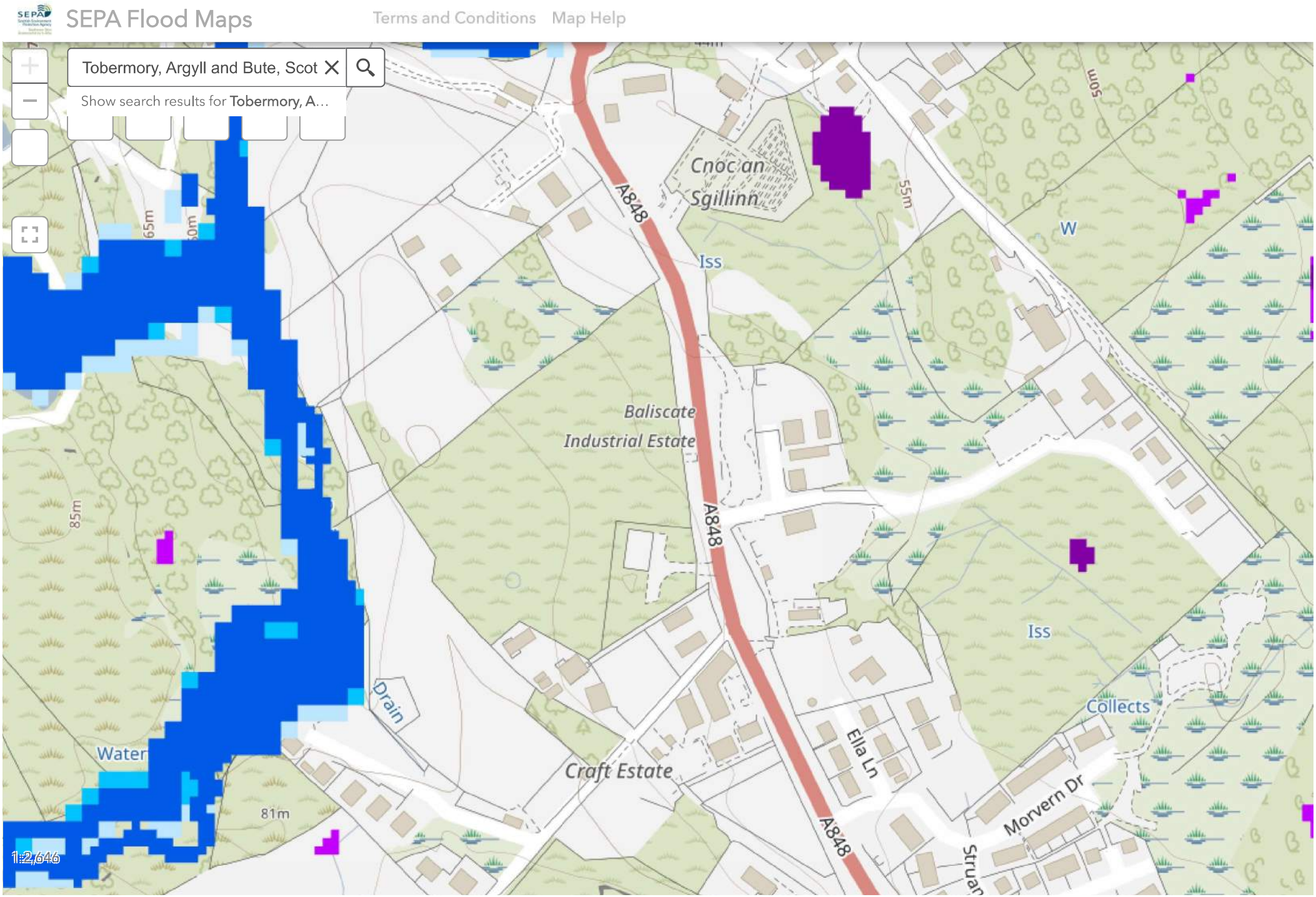
SEPA Flood Maps

Terms and Conditions Map Help

SEPA Flood Maps

Terms and Conditions Map Help




SEPA Flood Maps
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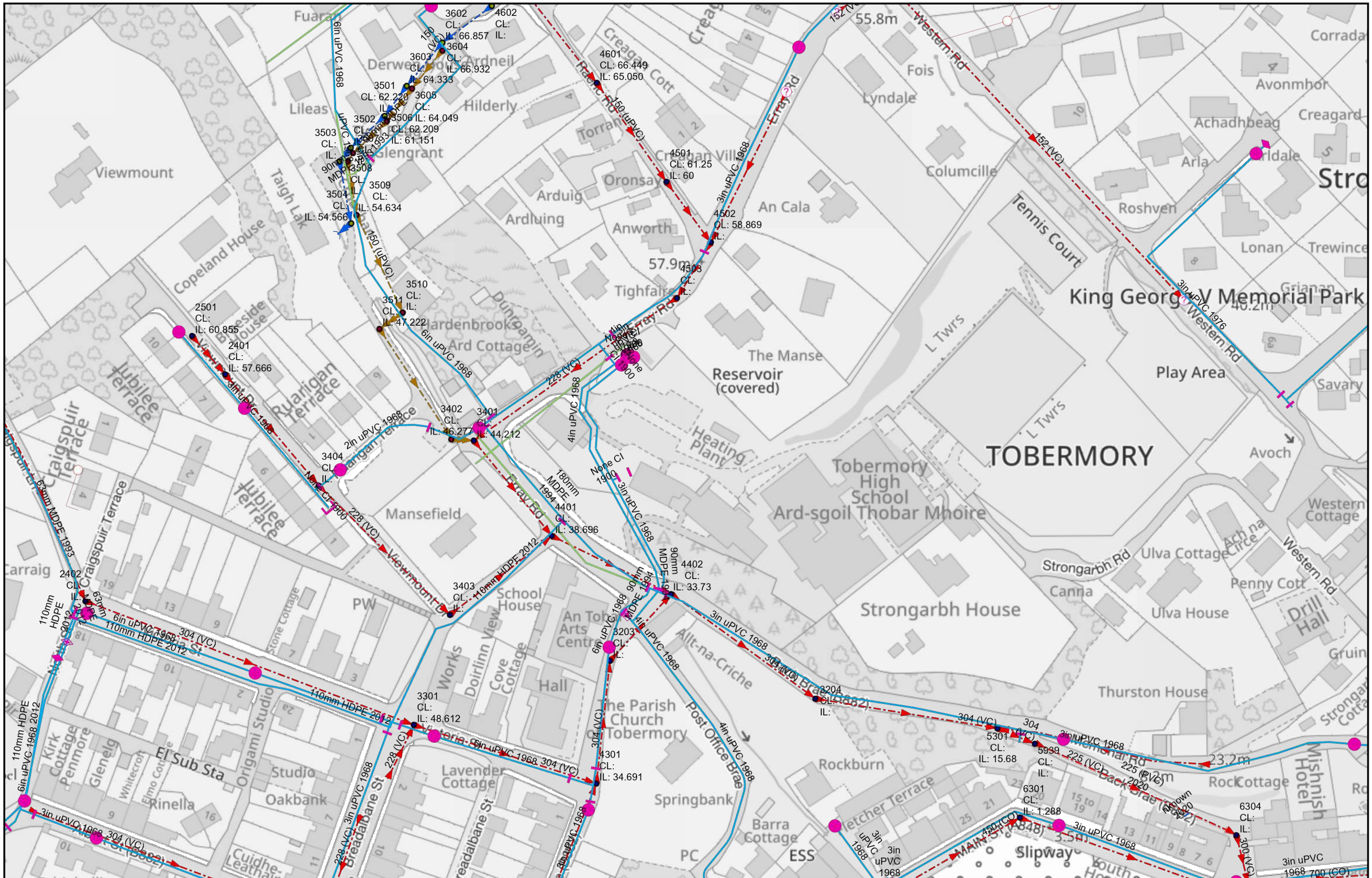
Appendices

B. Scottish Water GIS Records



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Scottish Water
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Scottish Water
Trusted to serve Scotland

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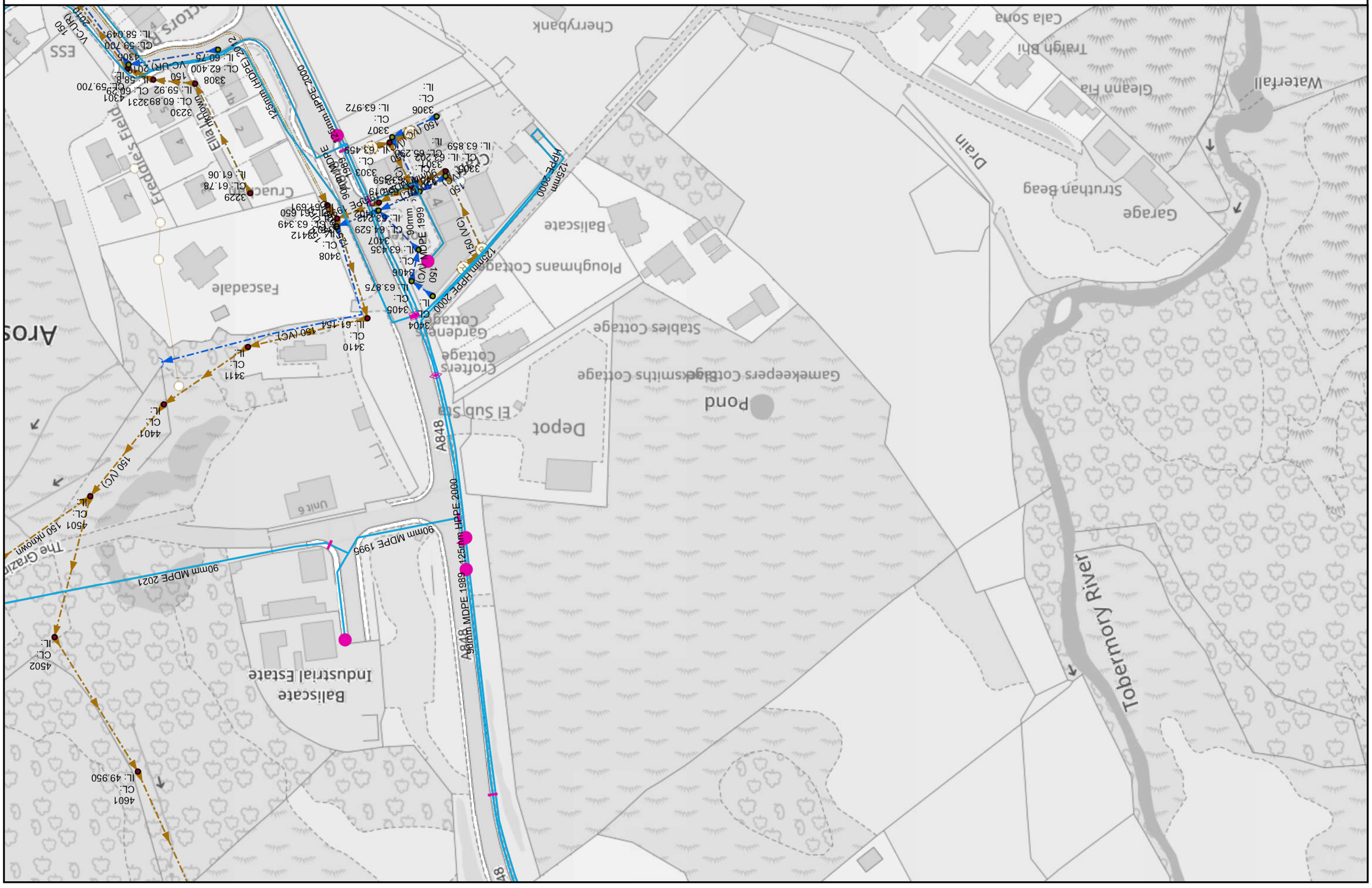
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Cala Sona
Traigh Bhí
Gleann Fia
Waterfall
Drain
Struthan Beag
Garage
Balloch
Ploughmans Cottage
Fascadale
Gardeners Cottage
Stables Cottage
Gamekeepers Cottage
Blacksmiths Cottage
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Depot
El Sub Sta
Unit 6
Freddie's Field
Ellas Meadow
Balloch Industrial Estate
The Grazings
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Tobermory River
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