


# APPENDIX A – ENGINEERING SITE APPRAISAL

## ENGINEERING SITE APPRAISAL

**AECC City Vision - Aberdeen Beach Regeneration  
Beach Boulevard  
Aberdeen**



**Client:** Aberdeen City Council  
**Date:** 3<sup>rd</sup> August 2021  
**Project No:** P15077

|             |   | SIGNATURE   | DATE                      |
|-------------|---|---|---------------------------|
| Prepared by | Dean Penfold<br>(Infrastructure Engineer) |  | 3 <sup>rd</sup> August 21 |
| Checked by  | Shona Tait (Director)                     |   | 3 <sup>rd</sup> August 21 |
| Version     | 1.0                                       |   |                           |

CONTENTS PAGE

|      |                                       |    |
|------|---------------------------------------|----|
| 1.0  | INTRODUCTION .....                    | 1  |
| 2.0  | PROPOSED DEVELOPMENT .....            | 1  |
| 3.0  | EXECUTIVE SUMMARY .....               | 3  |
| 4.0  | SITE OVERVIEW .....                   | 4  |
| 5.0  | TOPOGRAPHY .....                      | 4  |
| 6.0  | DEMOLITIONS AND BURIED FEATURES ..... | 5  |
| 7.0  | HISTORY .....                         | 5  |
| 8.0  | GROUND CONDITIONS .....               | 9  |
| 9.0  | DRAINAGE .....                        | 10 |
| 10.0 | FLOOD RISK .....                      | 12 |
| 11.0 | UTILITIES .....                       | 12 |
| 12.0 | TRANSPORT .....                       | 12 |
| 13.0 | ECOLOGY .....                         | 13 |

1.0 INTRODUCTION

Goodson Associates, as part of an initial site assessment for Aberdeen City Council (ACC), have undertaken a Civil and Structural Engineering Site Appraisal in relation to the construction of a new development, referred to as Aberdeen Beach Regeneration, in Aberdeen. The findings of this initial assessment are summarised in the sections below.

2.0 PROPOSED DEVELOPMENT

SITE LOCATION PLANS

Site Boundary The Aberdeen Beach Regeneration project forms part of the overall Aberdeen City Vision which will see the regeneration of seven 'zones' in and around the city. The development will consist of a range of leisure and sporting facilities, surrounding a new football stadium and social hub.  
A red line boundary and aerial photograph is shown in Figure 1.



Figure 1: Red line boundary shown on OS aerial map extract.





Figure 2: OS map extract.

Indicative Masterplan

An indicative masterplan layout has been prepared (see Figure 3) but is subject to change. Stand out features include:

- New Aberdeen FC stadium
- Refurbished beach ballroom
- Ice centre of excellent (including dry ski slope)
- Water and extreme sport facilities
- Public realm and plaza
- Improved beach and sea facilities

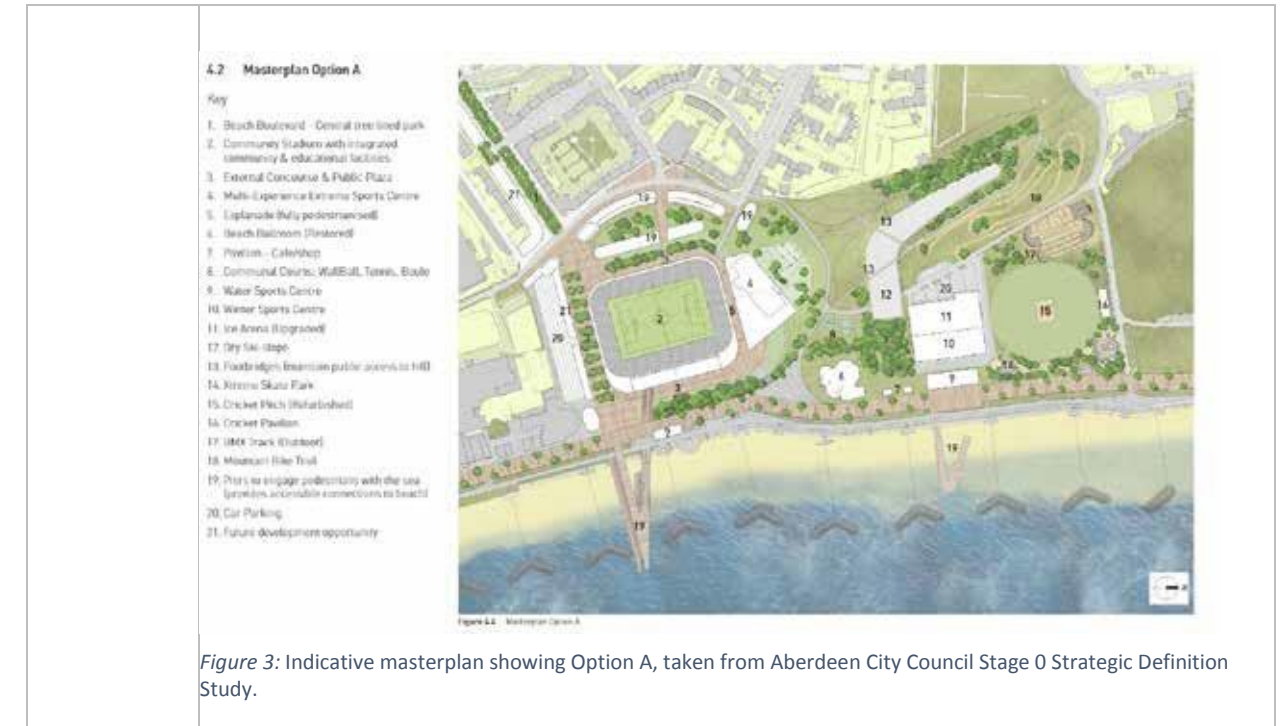


Figure 3: Indicative masterplan showing Option A, taken from Aberdeen City Council Stage 0 Strategic Definition Study.

3.0 EXECUTIVE SUMMARY

| ENGINEERING RISK SUMMARY   |        |  |
|----------------------------|--------|--|
| Risk Area                  | Risk   | Key Risks  |
| Topography                 | Green  | A full topographical survey is required to aid design.   |
| Demolitions / Obstructions | Red    | A number of existing structures will need to be demolished or re-purposed. Potential for hidden underground obstructions from current and historic features.   |
| Archaeology                | Red    | The site has been used heavily by industry and was of strategic significance during the World Wars. A number of points of interest have been identified and will need to be assessed fully to determine their impact on development. |
| Ground Conditions          | Red    | Surface deposits consisting of sand and silt, overlaying sandstone bedrock. Potential for shallow, tidal groundwater.  |
| Environmental Issues       | Red    | Significant risks posed by contamination from historic land uses.  |
| Drainage                   | Yellow | Drainage solutions subject to further consultation with Scottish Water.  |
| Flooding                   | Yellow | Minor surface water flooding present on site. Risks posed by coastal flooding.   |
| Services                   | Yellow | Services available, subject to availability and capacity.  |
| Transport                  | Yellow | Existing access points present.  |
| Ecology                    | Yellow | Ecological assessment required.  |

4.0 SITE OVERVIEW

| SITE LOCATION       |   |
|---------------------|---|
| Site Visit by       | Desk study only at this stage.  |
| Date Visited        | NA  |
| Access Restrictions | Fully accessible to public.   |
| Photographed        | NA  |
| Site Location       | The site is located to the east of Pittodrie, Aberdeen and forms part of the well-known Kings Links, Queens Links and Broad Hill areas. |
| Approx. Coordinates | OS Grid Reference: NJ 95168 07234<br>X (Easting): 395168 Y (Northing): 807234   |

| DESCRIPTION/BOUNDARIES                 |   |
|--|---|
| Description/Current Uses               | The site is separated into three main areas known locally as the Kings Links (cricket pitches), the Queens Links and Broad Hill. A road network consisting of Beach Boulevard, Accommodation Road, the Esplanade and Links Road surrounds the site; the latter of which dissects the site and separates Kings and Queens Links. A series of footpaths provides ped / cycle access to existing facilities, which includes cricket pitches, ice arena, leisure centre, beach ballroom, extreme sports centre and hotel. Broad hill acts as a popular walking venue. |
| Boundaries                             | The site is bounded by Kings Links Golf Centre and grounds to the north, Beach Boulevard to the south and a combination of Aberdeen Trinity Cemetery (Broad Hill Extension), residential dwellings and commercial establishments to the west. As a beachfront development, the site extends eastwards fully to the North Sea and includes the Esplanade.  |
| Footpaths / Rights of Way              | A number of footpaths provide ped / cycle access throughout the site.   |
| Access to Third Party Land             | The site is fully accessible to the public.   |
| Specific Boundary Treatments or Issues | The site and its surroundings are heavily trafficked and an appropriate trafficmanagement plan will need to be adopted.   |

5.0 TOPOGRAPHY

| TOPOGRAPHY                        |   |
|-----------------------------------|---|
| Existing Topographical Survey     | No topographical survey has been provided thus far. A full topographical survey of the site will be required to enable accurate analysis and modelling.   |
| Description of Current Topography | Available data suggests that the existing topography can be considered in two parts.<br>The Kings and Queens Links areas of the site are relatively level, except for some engineered bunds associated with the commercial land uses. Both areas can be considered basins which sit at a lower level than the roads that surround them. |

|  |   |
|--|---|
|  | The remainder of the site, known as Broad Hill, forms a localised high ridge running north / south at c. 28m above sea level at the highest point.  |
| Remodelling Required                         | Minimal remodelling should be required, subject to final development proposals.   |
| Retaining Walls Required                     | Retaining walls are not anticipated, subject to final development proposals.  |
| Buried Features and Underground Obstructions | Foundations associated with existing structures will be present.<br>A geophysical survey and site investigation is required to determine the potential presence of further obstructions related to historic activity within the area. |

6.0 DEMOLITIONS AND BURIED FEATURES

| DEMOLITIONS AND BURIED FEATURES |   |
|---------------------------------|---|
| Requirement                     | A number of existing structures, predominantly of commercial use, are present within both Kings and Queens Links. These will need to re-purposed or demolished.   |
| Underground Obstructions        | Foundations from existing structures will be present. A geophysical survey and site investigation is required to determine the potential presence of further obstructions related to historic activity within the area. |
| Potential Reuse/Salvage         | Some materials could be reused subject to sorting and testing.  |
| Likelihood of Asbestos          | Due to the age of existing structures, it is likely that asbestos will be present. An asbestos survey should be undertaken so that a suitable plan of action may be implemented prior to the start of any works.        |

7.0 HISTORY

| HISTORIC MAPPING |  |
|------------------|--|
| Map Date         | Description  |
| 1843-1882        | The site itself has had a number of former uses, as demonstrated in Figures 4 to 6.<br>The Queens Links region was formerly used as a race course (equestrian), and includes a tramway and beach battery closer to the coast. Kings Links overlaps with a former rifle range but was predominantly left as scrubland.<br>The surrounding area has a history of heavy industrial usage and includes chemical, gas, iron and granite works nearby. |



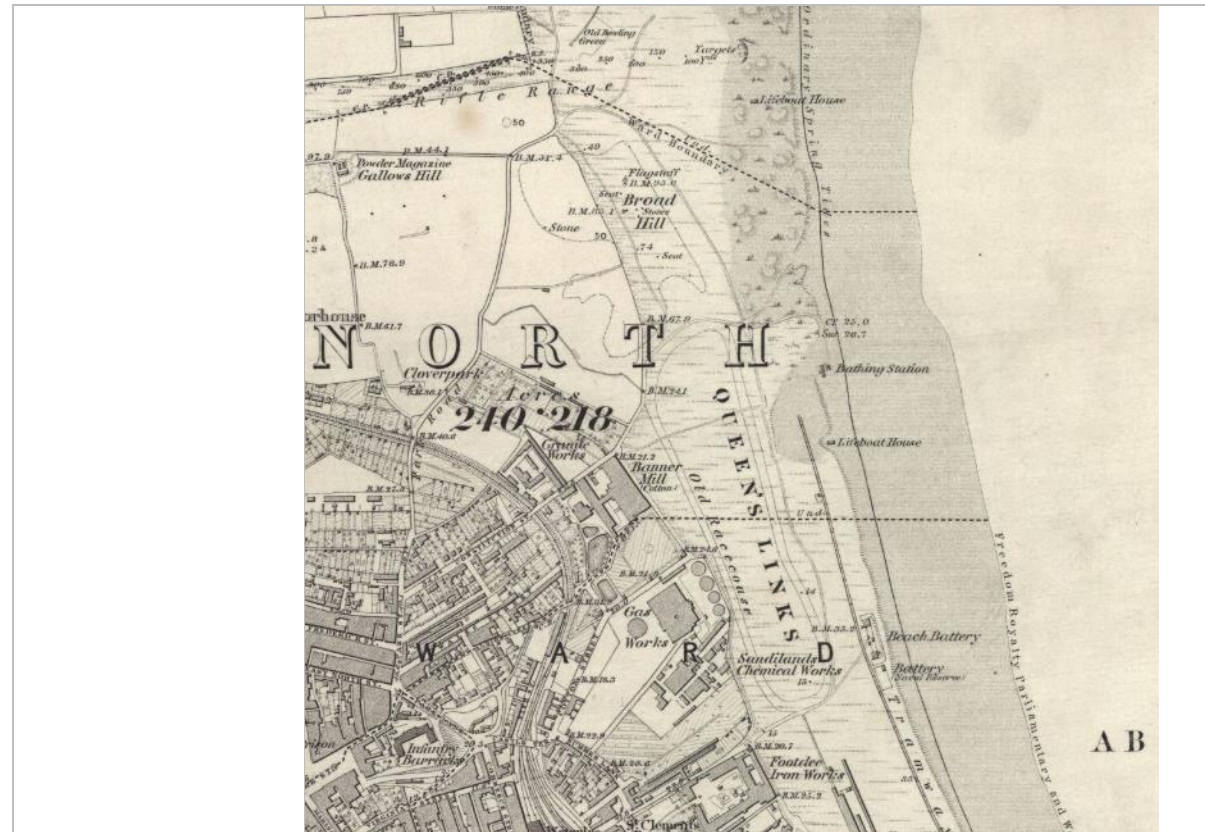


Figure 4: Historic map extract from 1843-1882.

1938 During the late 1930's and 1940's the site remained largely unchanged. The surrounding area has expanded to include leisure facilities.



Figure 5: Historic map extract from 1938.

1944



Figure 6: Historic map extract from 1944.

**ARCHEALOGY**

Archaeological Interest

The following items have been identified as points of interest on the Aberdeen City Council Historic Environment Record (HER) map and Canmore:

- Remains of a tramway.
- Large proportion of Queens Links used as late 19<sup>th</sup> to early 20<sup>th</sup> century bottle dump and tip.
- 20<sup>th</sup> Century ballroom
- WW2 heavy anti aircraft gun battery
- Site of gunpowder magazine
- Lighthouse / rocket house
- Boundary stones and battery gun remains on Broad Hill



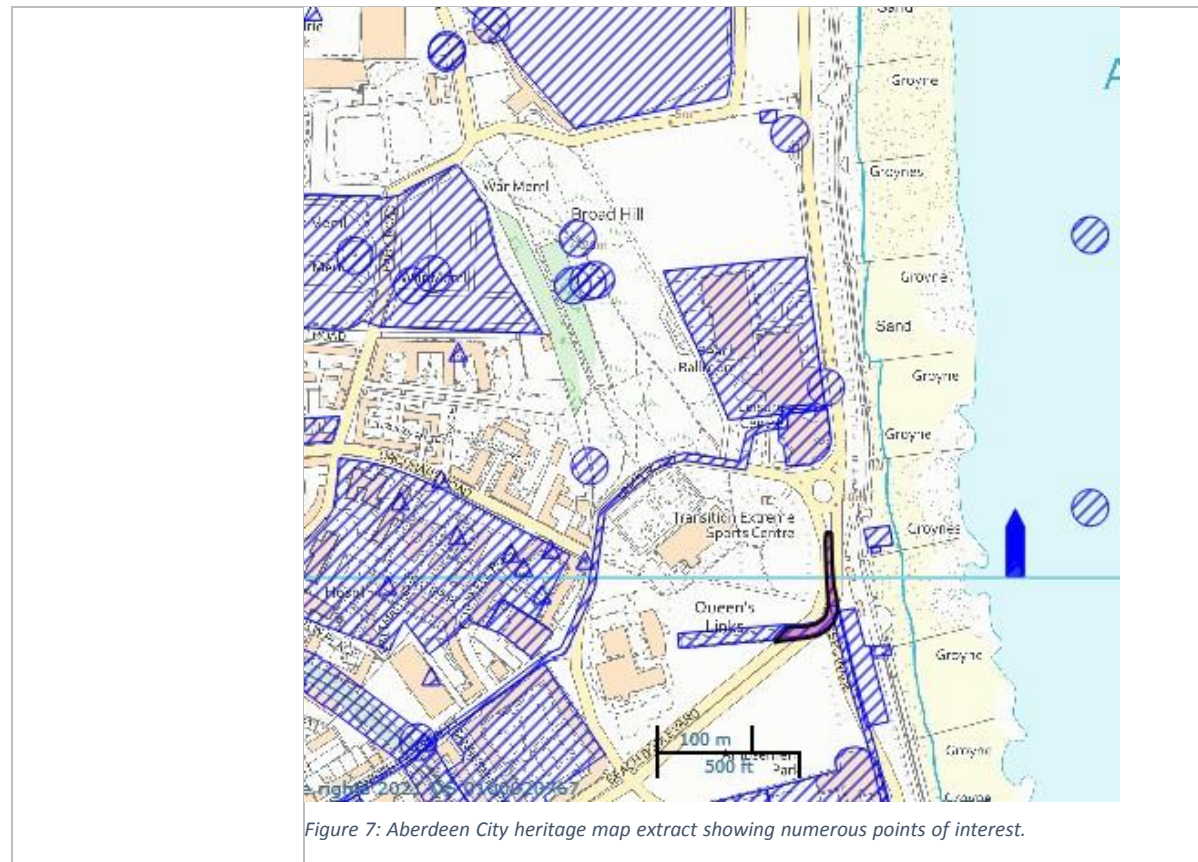


Figure 7: Aberdeen City heritage map extract showing numerous points of interest.

Extract of Canmore Map

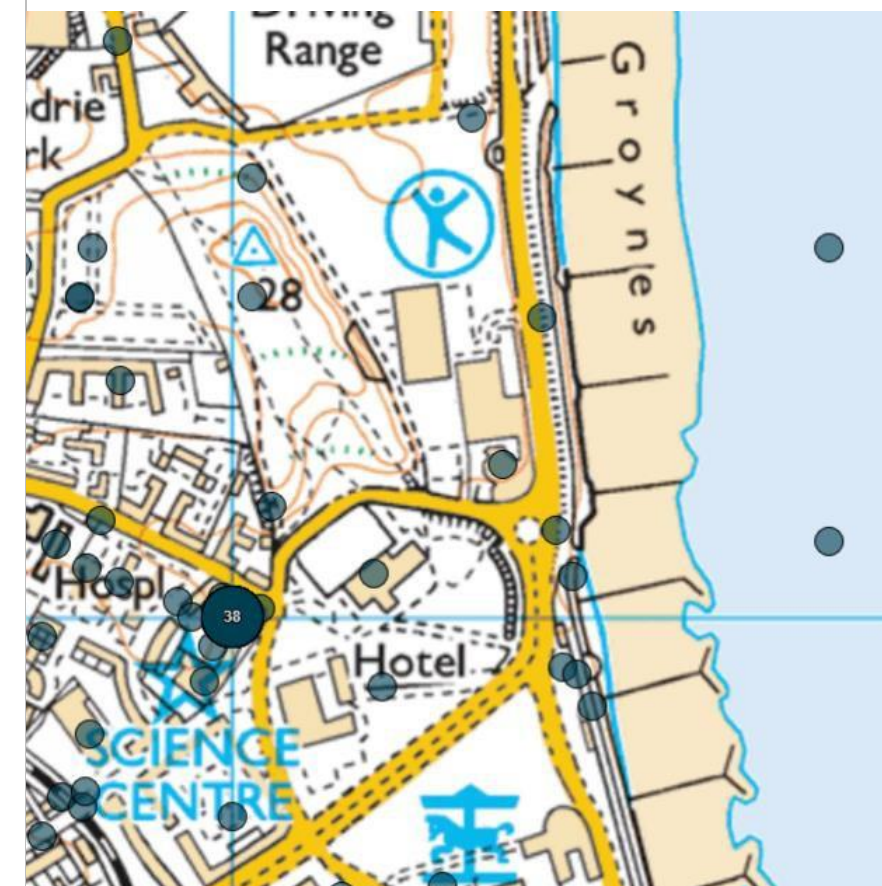


Figure 8: Canmore map extract showing numerous points of interest.

Archaeological Implications

Archaeological trial trenching will be required, with potential delays to development depending on the significance and complexity of any artifacts of interest that are found.

8.0 GROUND CONDITIONS

| GEOTECHNICAL CONSIDERATIONS              |   |
|--|---|
| Existing SI Available                    | It is understood that a desktop survey was carried out in 2007 for the Kings Links area of the site however this information has not yet been provided for review.  |
| Summary of Anticipated Ground Conditions | <p>The British Geological Survey maps indicate conglomerate and sandstone bedrock of the Brig O'Balgownie Formation, overlain by predominantly raised tidal flat deposits of clay, silt and sand. Some blown sand fronting marine beach deposits, consistent with the coastal location of the site, are also present.</p> <p>There are no borehole records located within the site boundary, however nearby records support the above information. Sands of variable properties are present at shallow depth.</p> <p>A 2B moderately productive aquifer is present and will need to be considered as part of the drainage and flood risk assessment.</p> <p>It should be noted that Aberdeen was heavily bombed during WWII. This, in combination with various gun placements and magazine stores, means there is potential for</p> |

|   |  |
|---|--|
|   | unexploded ordinance throughout the site. An investigation will be required to de-risk the site prior to construction.   |
| Risk of Mining and Mineral Extraction       | The site is outwith The Coal Authority's coal mining reporting area. The occurrence of past mining related activities is not anticipated.  |
| Risk of Quarrying                           | There are no records to suggest quarrying has taken place within the site boundary however historic quarrying has taken place nearby.  |
| Risk of Solution Features                   | Not anticipated at this stage.   |
| Is High Ground Water / Pumping Anticipated? | Given the coastal nature of the site, groundwater will likely be shallow and affected by the tidal system. This will need to be accounted for, as well as the possibility for pollutant pathways being formed between the site and sea during construction and beyond. |
| Solution for Proposed Building Foundations  | Given the potential for poor founding materials, it is likely that a raft or piled foundation solution will be required. A full intrusive site investigation is required to determine exact foundation requirements and how they may vary throughout the site.         |
| Solution for Ground Floor Slab              | Suspended floor slabs.   |
| Roads                                       | Road specification subject to on site testing.   |

| ENVIRONMENTAL CONSIDERATIONS   |  |
|--------------------------------|--|
| Existing Environmental SI      | No existing environmental SI has been identified at this stage.  |
| Radon Risk                     | The site and its surroundings are located within an area considered to be at very low risk from radon gas.   |
| Methane / CO <sup>2</sup> Risk | Due to the anticipated ground conditions and former land usage, it is unlikely that the development will require gas protection measures.  |
| Likely Contaminants            | <p>Given that this is a regeneration project, and the end use will not change significantly from its current usage, it is unlikely that significant problems will be encountered due to contaminated material.</p> <p>Having said this, the site is located on the edge of an area which has former industrial uses including chemical, gas, iron, rope and granite works. All of these have the potential to leach contaminants into the surrounding areas. Furthermore, an historic bottle dump and tip has been identified under the footprint of the existing leisure centre and ice arena.</p> <p>Without knowing how contaminated material, was dealt with when the site was first developed, it is not possible to discount the possibility that contaminated material will be encountered on site.</p> <p>Existing features such as car parking areas could contain localised contamination and therefore any made ground encountered should be tested for chemical contaminants and dealt with accordingly. Fly tipping has also been noted at various locations throughout the site.</p> |

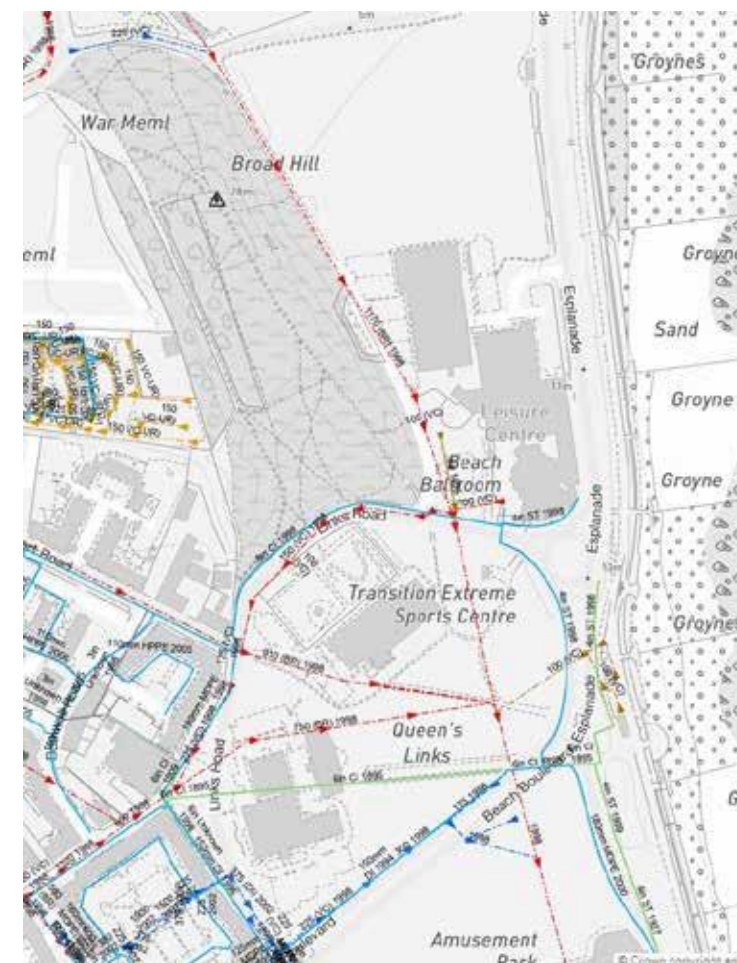


Figure 9: Scottish Water asset plans extract.

| DRAINAGE                               |   |
|--|---|
| Foul Drainage                          | A combined sewer runs north south through the centre of the site with a number of attributing sewers connecting into it. Points of connection and available capacity will need to be confirmed with Scottish Water.   |
| Foul Drainage Pumping / Off-site Works | Existing facilities are drained via gravity therefore it is anticipated that a pumping station will not be required.  |
| Surface Water Drainage                 | <p>Methods of infiltration are unlikely to be a feasible surface water drainage option due to the proximity to the sea.</p> <p>There are no water courses in or around the site.</p> <p>Surface water sewers are present within / close to the site and it is likely that these will be required as part of the overall surface water drainage strategy. Consultation with Scottish Water is required to determine availability and capacity of assets.</p> |
| Attenuation Required                   | Surface water attenuation will be required as part of the site layout.  |
| Surface Water Off-site Works           | Consultation with Scottish Water required.  |

9.0 DRAINAGE

The Scottish Water record drawing for the site and surrounding area is shown in Figure 9.

10.0 FLOOD RISK

| FLOODING       |   |
|----------------|---|
| Flood Risk     | The site is not located within a SEPA flood zone and is not considered to be at risk from flooding.   |
| Implications   | NA  |
| SEPA Flood Map | SEPA flood maps for surface water show localised areas of minor flooding which can largely be attributed to topography on site. These will be dealt with as part of the surfacewater drainage strategy.<br><br>There is very low risk of flooding from rivers with only a small area, east of the Esplanade, highlighted as "low risk".<br><br>The entire beach front (east of the Esplanade) is highlighted as high risk from coastal flooding. It is understood that Aberdeen beach suffers significant issues as a result of coastal erosions, currently aided by coastal defences in the form of groynes and wave breaks. |

11.0 UTILITIES

| HSE MAPPING                    |  |
|--------------------------------|--|
| PADHI Development Restrictions | The site does not currently lie within the consultation distance of a major hazard site or major accident hazard pipeline; therefore at present the HSE does not need to be consulted. |
| SERVICES                       |  |
| BT Telecoms                    | Further information required.  |
| Gas                            | Low pressure SGN gas main crosses site centrally south to north ranging from 335 to 500mm. Smaller distributor pipes connect to various units.   |
| Water                          | Potable water supply is available within Links Road and Beach Boulevard.   |
| Cable                          | Further information required.  |
| Electricity                    | Electricity is available throughout the site, subject to capacity.   |
| Other                          | None identified at this stage.   |

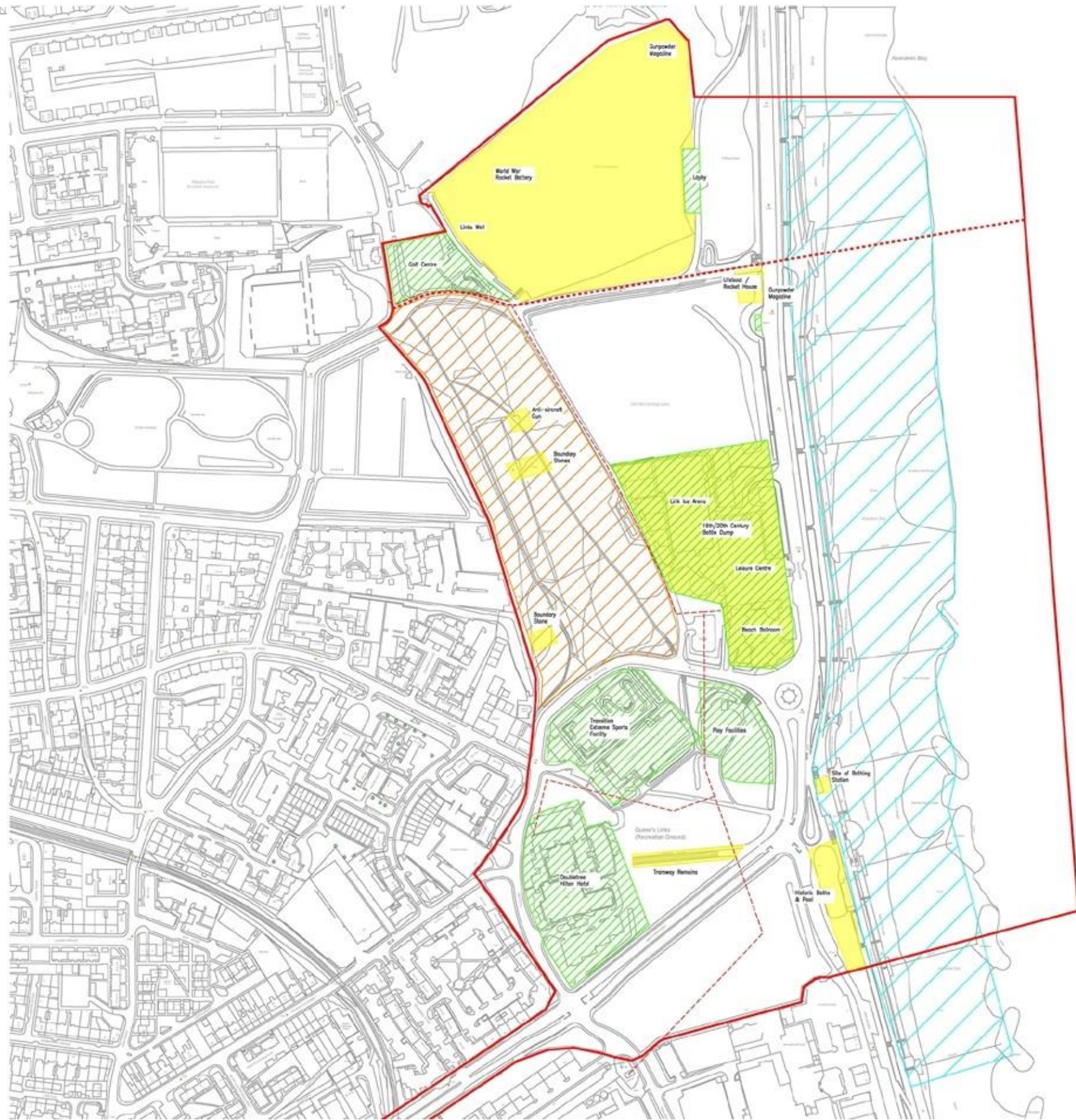
12.0 TRANSPORT

| HIGHWAYS & ACCESS        |  |
|--------------------------|--|
| Site Access Arrangements | Existing site accesses are available from Links Road and the Esplanade. Additional access points may be available subject to further assessment. |
| Off-site Improvements    | Improvements to the ped / cycle network will be require to encourage use with better access and egress to and from the city centre.              |

13.0 ECOLOGY

| ECOLOGY  |  |
|--|--|
| Ecological Interest  | A full ecological assessment of the site will be required to support a planning application. |
| Extract of Interactive Heritage Map<br><i>(From Council Mapping)</i> | None available.  |
| Ecological Implications  | Further assessment required.   |





- TO SIIC
- COASTAL DEFENCES / COASTAL FLOOD RISK
- DISTNC S1'UC11) / HAROSIA'R-G
- I.D. C&C MAIN

- M.IDM'C (QM)AW



Illoetdl to be octlod o later ctte

ACCCITYVISION  
 ABEADEENBEACHFAONTIAASTERPLAH  
 ABERDEEN

CONSTRAINTSPIM  
 122044

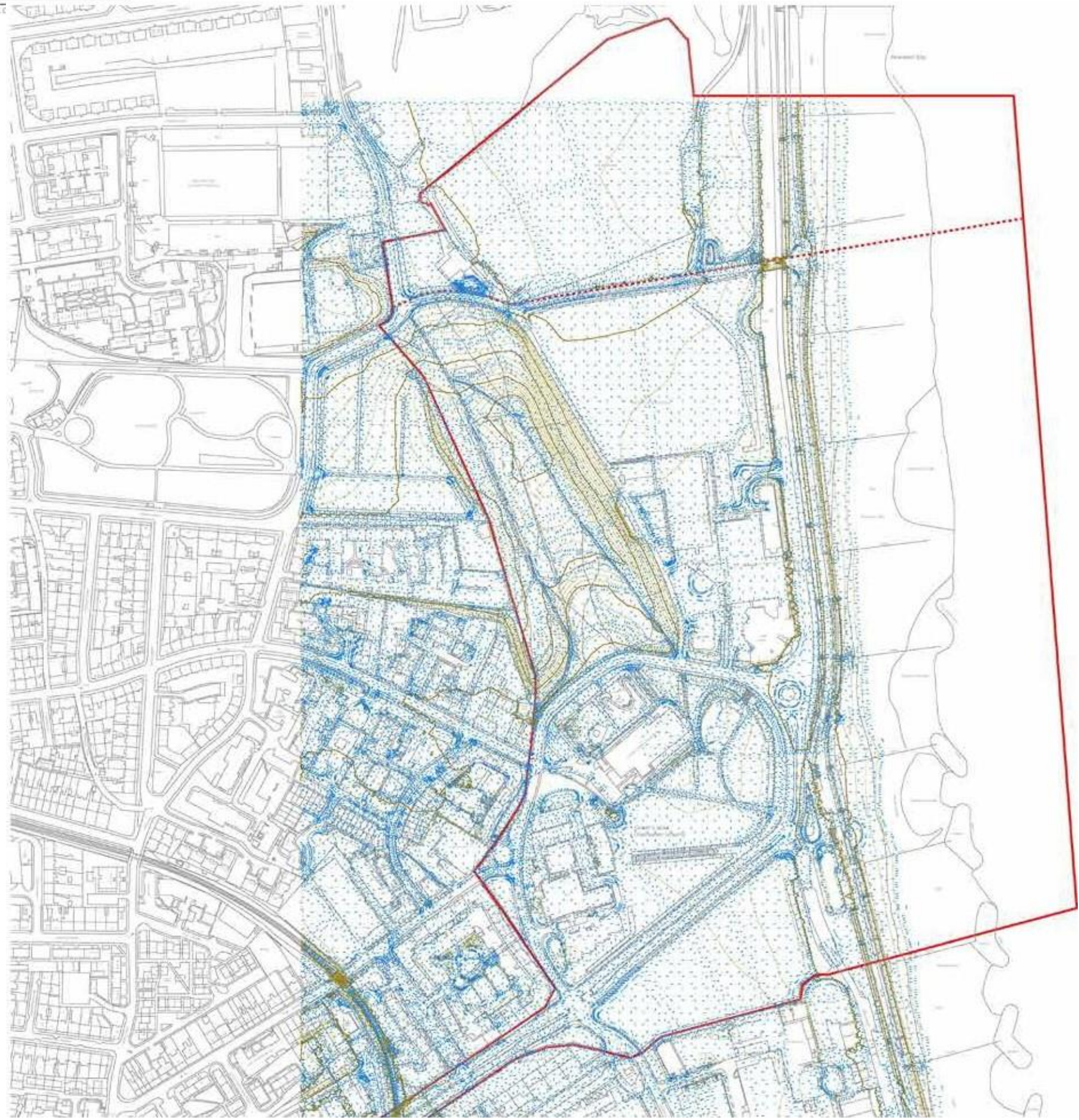
Associates  
 11 (0)11 1U107  
 c\_t.di""\*#Op0+bo...

Consulting Civil. Scnx.wr.11& T n\$ponuion f"nccn  
 53MdvilcStrtt,Edinburgh.EH3 1H.

APPROVAL S O

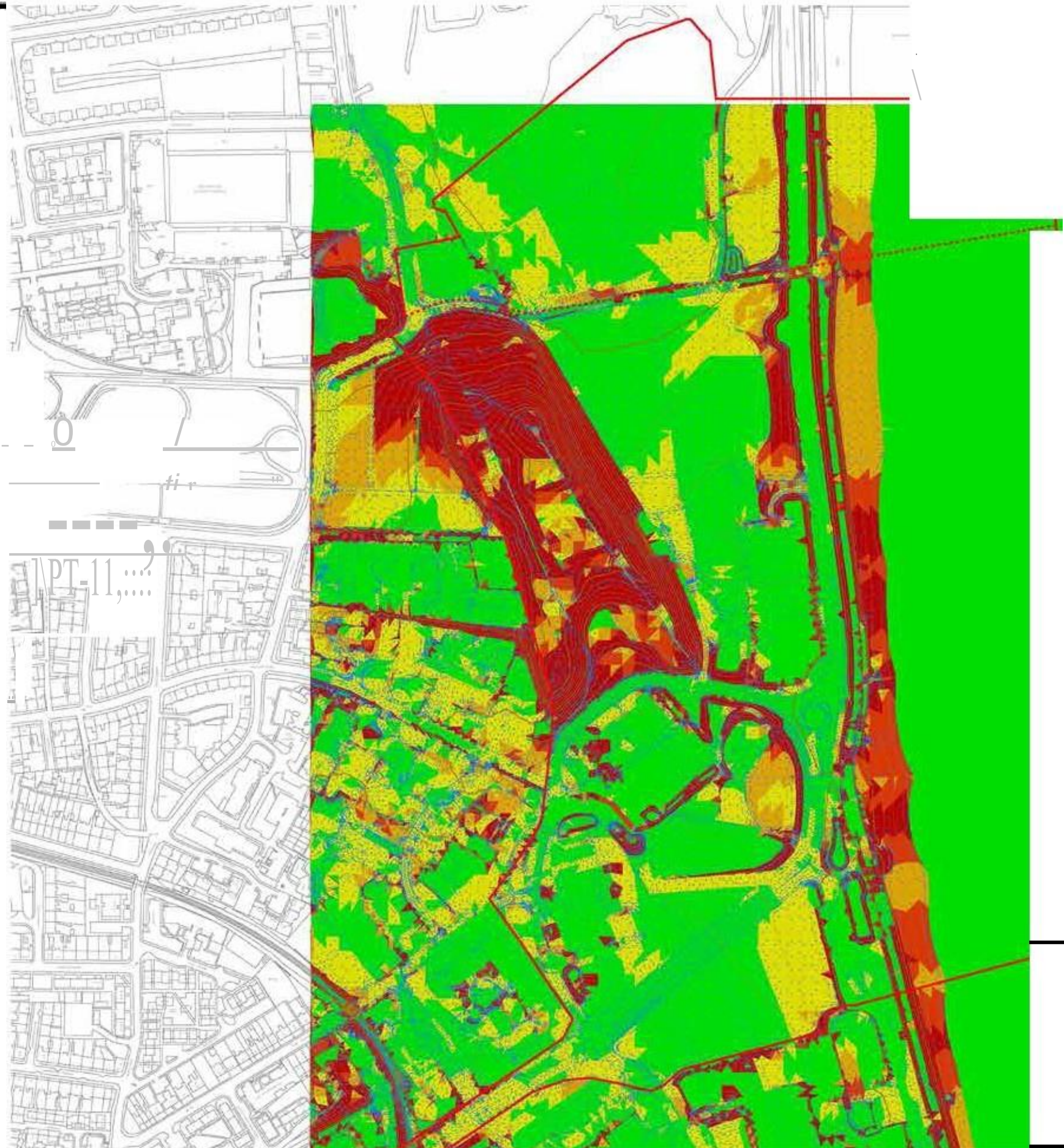
DIUCIJATOM;JOL;...  
 19.Q .Hal





|  |  |
|--|--|
|  |  |
| A:\c\CITYVISION<br>ABERDEEN BEACHFRONTMASTERPLAN<br>ABERDEEN                           |  |
| WATERSHED ANALYSIS   |  |
| Associates'  |  |
| Col1w01lg_Ov1LSmx.wrs 1 & Tran\$.p(fVPOO fl"Q:111etr<br>S) Melvil t. Edin urgb.EH3 7MI |  |
| APPROVAL   |  |
| ACB-GOZZ-XX-DRC-sk001 P01  |  |





| SUR.FACESLOPEDATA |       |       |       |
|-------------------|-------|-------|-------|
| .....             | ..... | ..... | ..... |
| I                 |       |       |       |
| I                 |       | ..... |       |
| o                 | o o   | ■     | ●     |
| I                 |       |       | ●     |

PT. 11, ...

Af:cCITYVISION  
 ABERDEENBEACHFRONTMASTERPLAN  
 ABERDEEN  
 SLOPEANALYSIS

wAssociates  
 (0)1,1U6 310F  
 (-1,....,bo-Jli# aoi\*wm

Col1w0llg,Ov1LSmx.wrs1 & Tran\$.p()fVPOOfl"Q:111etr  
 S) Melvll t Edin urgb.EH37MI  
 61/ib0Nrl". -llt-Ot.

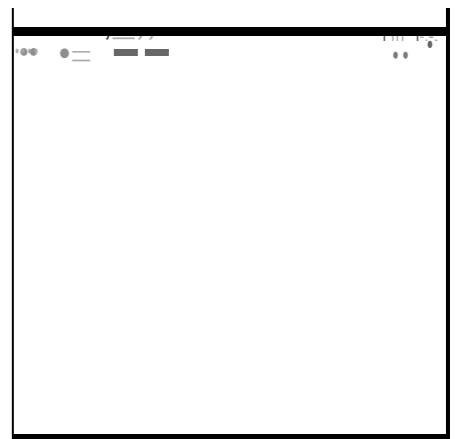
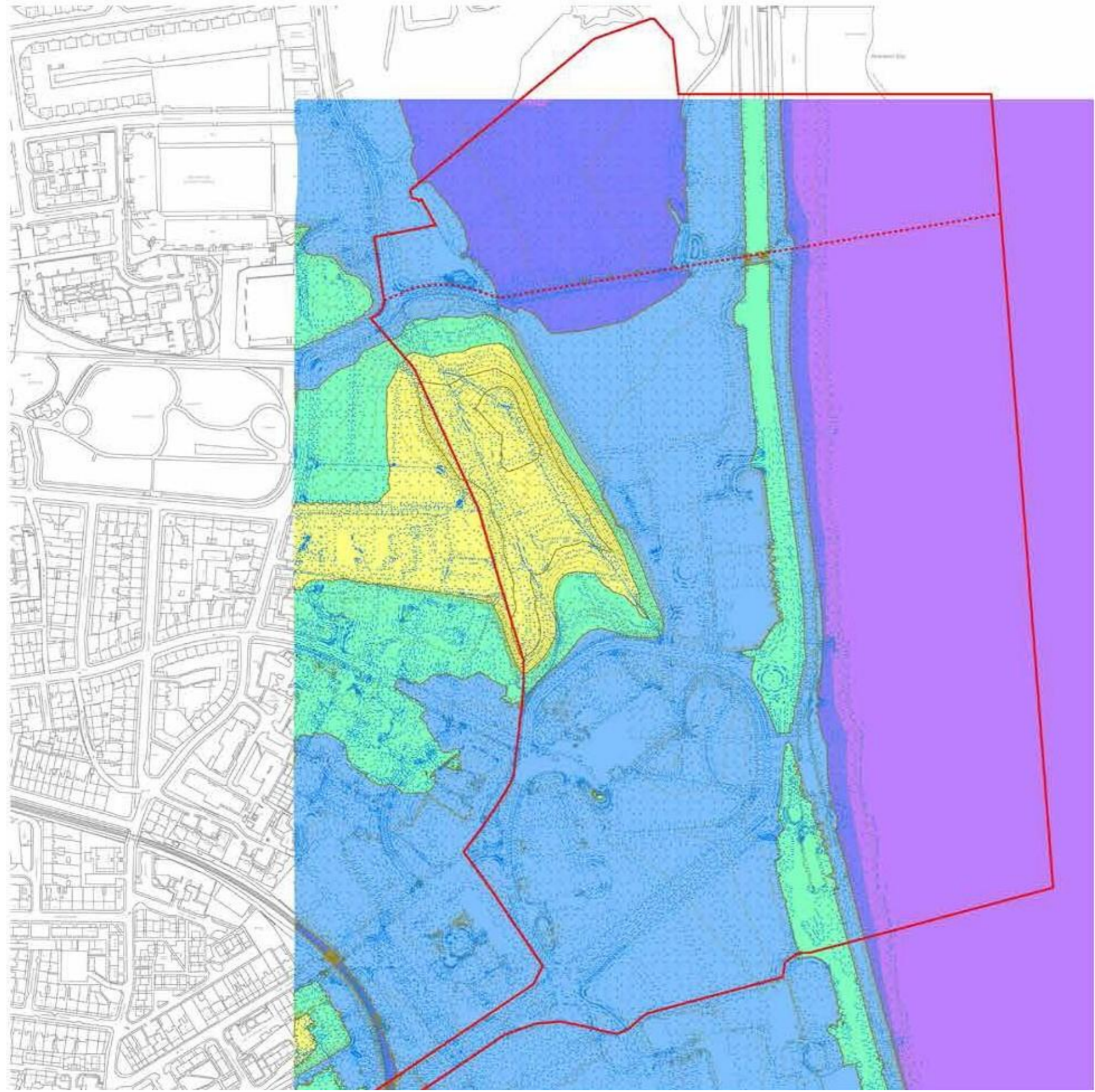
APPROVAL 

ACB-GOQZ-XX-DRC-sK002 P01





| SURFACE LEVEL DATA |       |       |       |
|--------------------|-------|-------|-------|
| 1                  | ..... | ..... | ..... |
| 0                  | ..... | ..... | ..... |
| 1                  | ..... | ..... | ..... |
| 0                  | ..... | ..... | ..... |
| 0                  | ..... | ..... | ..... |



f:cITYVISION  
 ABERDEEN BEACH FRONT MASTER PLAN  
 ABERDEEN  
 ELEVATION ANALYSIS

**Goodson**  
**Associates**  
 Co11w0llg.Ov1LSmx.wrs 1& Tran\$\_p0fVPO0-f.1"Q:111etr  
 S) Melvll t. Edin urgb.EH37MI  
 ti/iibonSL-1" -ilt-Qt.

#ANA  
**APPROVAL** **ISO=**

ACB-GOZZ-XX-DRC-sk003 ' P01