

## Appendix G Supplementary Information

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## Revision

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# Introduction

**“The creation of a world class City Centre that puts people at its heart, with a vibrant street environment that respects and enhances Aberdeen’s unique qualities and characteristics.”**

Vision Statement

Working in close collaboration with Aberdeen City Council, Ryder, LDA, Keppie Town Planning, DSSR, Fairhurst and Currie and Brown have developed concepts for streetscape interventions for Union Street Central and enhanced visioning for Union Street East and West, West End, Upperkirkgate and Schoolhill, Belmont Street Quarter and Castlegate. Proposals have developed from high level visioning developed in August 2021 and have been informed from early engagement with key stakeholders - engagement which will continue as proposals progress and develop.

The report will help inform decision making on the next steps for this exciting project. The proposals are supported by cost information, an understanding of the project risks, an appraisal of existing infrastructure within the intervention areas and identification of the next steps required to expand the design further through continued consultation.

This report should be read in conjunction with the following documents:

- Streetscape Interventions
- Engagement Report
- Programme and Risks
- Traffic Management Reports (SYSTRA)
- Cost Plans



# Statutory Consent Appraisal

## Keppie

### **Public Realm Works as ‘Permitted Development’**

A further assessment of any requirement for express planning permission to undertake the permanent City Centre Interventions was undertaken. It has been agreed with and confirmed by Council Planning Officers that many of the public realm works do not even constitute “development”, for the purposes of the Town and Country Planning (Scotland) Act 1997 (as amended), Section 26 (2)(b) as they would:

- be carried out by a roads authority;
- be undertaken **“on land within the boundaries of a road of any works required for the maintenance or improvement of the road”**; and,
- where **“not exclusively for the maintenance of the road”**, the works would not have **“significant adverse effects on the environment”**.

Where any of the works did not fall within the above caveats, and therefore would constitute “development”, it was also confirmed that such works being proposed would fall within the description of “permitted development” by virtue of the Town and Country Planning (General Permitted Development) (Scotland) Order 2011 (as amended). Class 31 of this Order confirms that the following works are ‘permitted’:

**“Class 31 - The carrying out by a roads authority (a) on land within the boundaries of a road, of any works required for the maintenance or improvement of the road, where said works involve development by virtue of section 26(2)(b) of the Act; or (b) on land outside but adjoining the boundary of an existing road of works required for or incidental to the maintenance or improvement of the road.”**

Council officers have advised that they generally concur with the above-outlined assessment and interpretation of the relevant legislation. They have advised that their final confirmation of this assessment and interpretation will be based on the finalised proposal details, and that Planning Permission or Listed Building Consent may be required for works outwith the adopted roadway / footway. Irrespective, the Design Team will continue to work with ACC officers to ensure that developing design proposals are complimentary to, and respectful of, the Conservation Area status, adjacent Listed buildings and associated built heritage assets.

### **Temporary Outside Seating**

Council Officers have confirmed that planning permission may be required for any temporary external seating areas to be located along areas of pavement or within the roadway (e.g. outdoor café seating), as such uses may constitute a ‘change of use’. As such interventions are

temporary in nature, relevant planning consents can be sought later in the programme, once detailed layouts and temporary seating arrangements have been agreed with all relevant stakeholders.

### **Castlegate - Mercat Cross / Gordon Highlanders Statue**

The emerging proposals do not currently involve any works to, or relocation of, the Mercat Cross or ‘The Gordon Highlanders’ Statue at Castlegate. As such, no Listed Building Consent and/or Conservation Area Consent will be required on this basis.

### **Environmental Impact Assessment (EIA)**

Discussions with Council Officers have considered the potential of City Centre streetscape works to constitute EIA development for the purposes of 'The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017' (Planning EIA) and 'The Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017' (Roads EIA). There is agreement with Council Officers that:

- For the purposes of planning, the proposals do not constitute either Schedule 1 nor Schedule 2 development, and there is no requirement for the proposed to be Screened for EIA;
- For the purposes of Roads legislation, it is not anticipated that the proposals would require any approval by Scottish Ministers, and therefore no 'Roads EIA' is required.

As such, the streetscape intervention proposals are confirmed as not requiring an Environmental Impact Assessment.

### **Habitat Regulations Appraisal (HRA)**

The Proposed LDP advises that "A Habitats Regulations Appraisal is required to accompany development proposals in order to avoid adverse effects on the qualifying interests of the River Dee SAC". It has been agreed with Council Officers that any Habitat Regulations Assessment can be undertaken once detailed designs have been finalised. However, following an initial assessment against the HRA Screening criteria, it is considered that the proposals will not notably affect any protected 'European site', in that Scottish Water's physical assets plan for Aberdeen City indicates that the combined sewer network, running beneath the proposal area, connects into the Nigg Wastewater Treatment Works to the south east of the city before discharging to the North Sea at the South Harbour. Connection to the waste water works from the north side of the River Dee is understood to run underneath the River Dee, with no direct discharge to the river itself.

Notwithstanding this, a Habitats Regulation Appraisal will be required to accompany the proposals to comply with the requirements of the Proposed Local Development Plan, which will also likely require a Construction Environmental Management Plan to control surface water run off.

# Mechanical, Electrical and Public Health Summary

## DSSR

Dialogue has been undertaken with utility companies and relevant stakeholders to help ascertain how the services requirements would potentially impact on the overall Streetscape works. This has included meetings with Aberdeen City Council (ACC) Street Lighting, Roads, Smart City and Sustainability representatives.

With the exception of Aberdeen Heat and Power (AHP) the feedback received from utility providers is that there are no significant works planned in the Streetscape development area in the foreseeable future. The extent of the AHP network future proofing will in part be determined by the decision on the heat source for the Market development and there will need to be future dialogue with AHP and ACC to determine what should be provided as part of the Streetscape works.

In order to provide future flexibility for the Smart City proposals an underground containment system of ducts and access chambers will require to be provided along the length of Union Street.

For the Street Lighting it has been advised that existing luminaires and wall mounted feeder pillars will be retained and re-used with ACC currently undertaking a programme of replacing any luminaires that are not high efficiency LED types. Relocation of remote feeder pillars to suit the new design proposals will be reviewed as the design develops for all areas.

The opportunities for saving energy and limiting carbon emissions through the services design of the Streetscape works is limited as no building works are part of this element of the overall City Vision project. The street lighting will continue to be powered via the existing power network but any new feature lighting provided will be LED type.

There are some potential opportunities to incorporate some smaller scale energy efficient design measures and these have been identified in the Sustainability Review section. The Union Street Central area design has been developed in more detail and many of the services integration items identified for that area will be relevant for other Streetscape development areas.

In general, the new services requirements associated with the Streetscape works appear to be limited in scope and the services works do not appear to present a major issue to the development. However, the main issue that needs to be addressed is the potential impact on existing utility services associated with the construction works. Although the surface levels are not being permanently lowered there will be some excavation and reinstatement works associated with the new surfaces provision.

The detailed extent of the excavation works, along with detailed survey of the existing services (ie via ground radar survey) should be undertaken at the next design stage to help determine if localised services diversions will be necessary and what protection measures are likely to be required during the construction works.

There will also require to be further coordination of proposed works with the existing and proposed below ground services, in particular how any SUDS and street furniture proposals can be integrated to minimise any diversion works.

# Civil Engineering Overview

## Fairhurst

### **Ground Conditions and Underground Structures**

There are existing underground bridge structures, vaults and basements within the Union Street Central section, which will need to be carefully respected through the design and construction phase. Works must not be detrimental to the waterproofing of structures beneath Union Street, and due consideration to the structural integrity of bridges is required.

The historic construction make-up of Union Street is unknown. It may contain generally unsuitable material for constructing the Public Realm over. Intrusive Site Investigation works are required to determine ground conditions and bearing capacity, which will determine the required structure of Public Realm works. Site Investigation works will involve some disruption to Union Street operation, requiring Traffic Management measures.

### **Public Realm Construction**

Replacing the existing flexible road construction with a rigid Public Realm construction is likely to mean that the entire existing road box will need to be removed and replaced. Public Realm make-up will be designed in accordance with BS7533-101 (2021). The project has been costs on an assumption that the carriageway setts will be 150mm deep, which allows use by approximately 300 vehicles per day.

Regular use by greater volumes of traffic would require the setts to be up to 180mm deep, which would increase project cost.

A levels exercise is yet to be undertaken. Footways are to be widened which will mean they are extended into the Union Street carriageway. Kerb and channel levels will need to be carefully reviewed due to required footway crossfalls and carriageway cambers. This may result in crossfalls and cambers having to be altered, or finished levels being amended. Footway levels will be maintained where possible, and will be tied in some locations.

### **Surface Water Drainage**

Other than the actual surface drainage details, such as channels and gullies, it is anticipated that existing main infrastructure will continue to serve the overall drainage of the area. Surface water run-off within the project area is collected in gullies and drained to combined sewers in Union Street. Dialogue with Scottish Water will commence once design details are finalised. Discussion with Scottish Water can be a lengthy process, depending on the complexity of any changes required to the sewer network. This is likely to be limited to changes in the location and / or number of gullies, which may require additional connections to spine sewers.

### **Construction Programme and Approvals**

The project will require various consents. From a civil engineering perspective, this will include Section 56 Road Construction Consent (granted by ACC) and Technical Approval for any drainage changes (granted by Scottish Water). Traffic Regulation Orders will be required to change the intended use or restrictions that apply to any road. These would be granted by ACC, following statutory processes.

The full Engineering Review Report can be found in appendix 5.

# Conclusion

## Next Steps

This report summarises the objectives, risks and costs for the city centre intervention areas to inform Aberdeen City Council decision making in November 2021. To develop proposals to the next stage there are a series of steps that will be undertaken.

### Engagement

Continue engagement with key stakeholders, including representatives for inclusive design; active travel; place; business and investment; culture, leisure and tourism; and community and voluntary. It is anticipated this consultation will continue through developed design and at key stages through detail design.

### Developing the transportation strategy

Continue to engage transportation consultants Systra to further refine proposals collaboratively with Aberdeen City Council roads and transportation officers. Key to the success of the project is being able to deliver the project vision while still ensuring the operational flow of public transport and servicing infrastructure through the implementation phases and upon completion.

### Developing detail of the intervention strategy

Based on continued feedback and ongoing consultation, proposals for each area will be further developed in conjunction with consultant input on transportation, drainage and infrastructure, including developing the short term implementation strategy for Union Street Central.

### Health and Safety

Construction Design and Management (CDM) risks have been considered as part of these proposals. These will be further reviewed, assessed and documented as part of the next phase.

### Cost review

Costs will be monitored against allowances as the designs develop.

### Technical summary and timescale

At the next stage the project scope will be firmed up and timescales defined. The current programme will be monitored and refined as the streetscape solutions develop. Key decisions required to implement the project will be captured.



# Appendices

# Appendix 1

## Utilities Review

### Introduction

The potential impact of the Streetscape Works on the existing utilities within the development has been reviewed, along with consideration of what services networks may require to be provided as part of the works. This includes the requirement to future-proof the new Streetscape development as far as possible in order to minimise future disruption from underground services works.

We have approached all existing utility providers to obtain record information to gauge the potential impact of existing services and discuss any future planned works within the development area.

We propose to engage with utility providers in more detailed discussions as the design develops and proposals are finalised.

### Utilities

#### Gas

#### Existing Services & Planned Works

There is existing low pressure gas infrastructure throughout the development area which is owned and operated by Scottish Gas Networks (SGN). Refer to the Feasibility Report for maps of existing gas infrastructure. SGN have been contacted and confirmed that at present there are no planned works within the Streetscape development area.

### Diversions & Temporary Protection

The exact scope of planned works within throughout the Streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works.

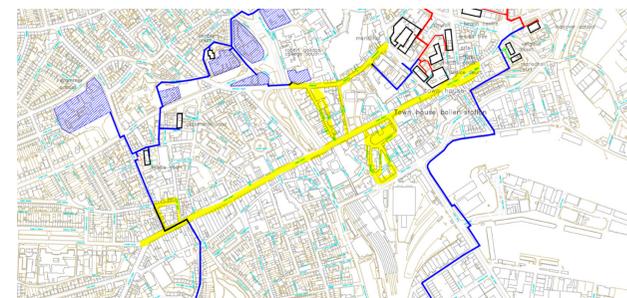
It does not appear, based on the proposed change in ground levels, that the existing gas infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to SGN assets.

#### Aberdeen Heat & Power (AHP) Existing Services & Planned Works

There are no existing Aberdeen Heat & Power (AHP) assets within the proposed development area. However, AHP have provided information on their proposed future expansion plans, although proposed dates for these are not available at this time. In terms of this proposed future expansion the development area that would be significantly impacted is Union Street West and Rose Street.

There is a proposed crossing of Union Street between Bon Accord Lane and Rose Street. There are other minor areas which could be mitigated through discussions with AHP.

These are located in Schoolhill at Blackfriars Street and Flourmill Lane. Map below detailing AHP network (red is existing, blue is proposed) and the Streetscape development area highlighted in yellow.



Due to the size of pipework likely to be required providing ducts for future installation is unlikely to be practical and therefore sections of pipework would likely need to be installed in advance of the proposed expansion. Discussions with AHP on the practicality and payment for this installation would take place at the next design stage.

AHP noted on 8th September '21 that discussions were underway to connect the Aberdeen Market onto their network which would require co-ordination with the Streetscape team to align. If required then this would likely entail routing pipework from the Townhouse/Marschial College area along Union St East section and into the Union St Central area. However, whether the Market development requires this District Heating connection has yet to be determined.

# Appendix 2

## Street Lighting Review

### Introduction

A meeting has been held, and dialogue undertaken, with the ACC Street Lighting team to help assess the necessary interfaces with the Streetscape development. As the scheme develops more specific discussions can take place on the necessary interfaces with the Streetscape works, although these are currently envisaged to be limited in scope.

### Street Lighting

Through discussions with Aberdeen City Council (ACC), it has been confirmed that the existing street lighting throughout Aberdeen City Centre is currently being upgraded to Light Emitting Diode (LED) technology. These works are being undertaken directly by ACC and not included within the scope of works of the Streetscape project.

There are wall mounted luminaires, cables etc. associated with the street lighting installation which shall remain in situ during the planned upgrade works and for the duration of the Streetscape project. Photographs of some examples of existing wall mounted street equipment shown adjacent.

It was also confirmed by ACC that the ongoing upgrade works are incorporating intelligent lighting controls to allow remote control and monitoring of luminaires.

Access to existing street lighting equipment such as feeder pillars, junction boxes, cut-outs, luminaires, controls and cabling etc. shall not be impacted by the Streetscape project.

Where existing street lighting feeder pillars exist within the footprint of the streetscape, these shall remain in situ, where possible. There may be a requirement to relocate existing street lighting feeder pillars to suit proposed street furniture / planters etc., however, it is anticipated these will be limited. Extent of works to be reviewed as the design develops through all areas.

There are also column mounted street lights, however, these are limited in quantity throughout the development. It would be the proposal to retain existing street lighting columns where these are within the proposed development areas and temporarily protect ACC street lighting equipment where these may be exposed by the works. New lighting will be installed as part of the streetscape scheme, which shall be fed from local street lighting feeder pillars.

The extent of lighting for the Streetscape development will be limited to feature lighting for public art attractions and interactive displays. The full extent of the public art and interactive feature lighting still needs to be fully developed, however, is envisaged these lighting installations shall be provided with intelligent controls to allow central monitoring via ACC's command centre.



### **Diversions & Temporary Protection**

There are no proposed diversion works or temporary protection measures associated with existing AHP equipment within the Streetscape area of works.

### **Power**

#### **Existing Services & Planned Works**

There are existing high voltage, low voltage and fibre optic cabling associated with local electricity DNO, Scottish & Southern Energy Networks (SSEN), in the proposed development area. Refer to the Feasibility Report for maps of existing SSEN infrastructure. SSEN confirmed on 13th September '21 there are no other planned works within the proposed zone.

### **Diversions & Temporary Protection**

Due to the extent of existing SSEN assets in the proposed development area, it is very likely diversions will be required locally where clashes with new equipment cannot be avoided. It does not appear, based on the proposed change in ground levels, that the existing SSEN infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to SSEN assets.

### **Water**

#### **Existing Services & Planned Works**

There is existing water infrastructure within the Streetscape area of the development which is under ownership of Scottish Water (SW).

Refer to the Feasibility Report for maps of existing Scottish Water infrastructure.

SW have yet to confirm if there are any planned works within Streetscape development area.

#### **Diversions & Temporary Protection**

The exact scope of planned works of the Streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works. It does not appear, based on the proposed change in ground levels, that the existing Scottish Water infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to SW assets.

### **Telecoms**

#### **BT Openreach**

#### **Existing Services & Planned Works**

There is existing British Telecom (BT) Openreach infrastructure throughout the streetscape area. Refer to the Feasibility Report for maps of existing BT infrastructure.

BT Openreach have yet to confirm if there are any planned works associated with their equipment within the Streetscape zones.

### **Diversions and Temporary Protection**

The exact scope of planned works of the Streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works. However, it is likely that existing drawpit chambers and potentially above ground cabinets will need relocated as part of the overall scheme. It does not appear, based on the proposed change in ground levels, that the existing BT infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to BT assets.

### **City Fibre**

#### **Existing Services & Planned Works**

There is existing City Fibre infrastructure within the proposed development area, however, these assets are limited to Union Street West, The West End, Aberdeen Market and Upperkirkgate & Schoolhill. Refer to the Feasibility Report for maps of existing City Fibre infrastructure.

City Fibre have yet to confirm if there are any planned works within the areas where their assets are located.

### **Diversions & Temporary Protection**

The exact scope of planned works within the Streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works. It does not appear, based on the proposed change in ground levels, that the existing City Fibre infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to City Fibre assets.

### **Vodaphone**

#### **Existing Services & Planned Works**

There is existing Vodaphone infrastructure throughout the streetscape area. Refer to the Feasibility Report for maps of existing Vodafone infrastructure.

Vodaphone have confirmed there are no planned works associated with their equipment within the development zone.

### **Diversions and Temporary Protection**

The exact scope of planned works of the Streetscape needs to be developed further

to understand whether any diversions will be required as part of the proposed works. However, it is likely that existing drawpit chambers will need relocated as part of the overall scheme.

It does not appear, based on the proposed change in ground levels, that the existing Vodaphone infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to Vodaphone assets.

### **Neos Networks**

#### **Existing Services & Planned Works**

There is existing City Fibre infrastructure within the proposed development area, however, these assets are limited to road crossing on Union Street West, Castlegate and Upperkirkgate & Schoolhill. Refer to the Feasibility Report for maps of existing Neos Networks infrastructure.

Neos Networks and ACC IT have confirmed there are no planned works within the areas where their assets are located.

### **Diversions & Temporary Protection**

The exact scope of planned works within the Streetscape needs to be developed further to understand whether any diversions will be

required as part of the proposed works. It does not appear, based on the proposed change in ground levels, that the existing Neos Networks infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to Neos Networks assets.

### **Smart City / Sustainability**

#### **Existing Services & Planned Works**

Through discussions with ACC sustainability and Smart City team members, it was noted that existing smart city infrastructure exists within the proposed development area.

It was also noted during discussions that there is a requirement to install new spare ducts along the length of Union Street for future smart city installations to avoid major disruption in the coming years.

ACC requested 2no. spare ducts on each side of Union Street, with various road crossings and strategically placed drawpits along the length of the run.

There are also upgrade works to the existing Street Lighting luminaires throughout the city centre which shall be undertaken outwith the Streetscape scope of works.

The existing below ground infrastructure supporting the street lighting installation will remain in situ, with only above ground assets being replaced as part of the works.

### **Diversions & Temporary Protection**

The exact scope of planned works within the Streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works.

It does not appear, based on the proposed change in ground levels, that the existing Smart City infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to Smart City assets.

# Appendix 3

## Sustainability Review

### Introduction

A meeting was held with various members of the ACC team to discuss sustainability aspirations and requirements as part of the Streetscape development. It was acknowledged that many sustainability and carbon reduction initiatives are associated with buildings as opposed to the Streetscape works but that this development should attempt to help minimise emissions and facilitate future sustainable developments.

### Sustainability

Aberdeen City Council (ACC) have developed a Smart City strategy and action plan to focus on and deliver sustainable public services for future generations.

As part of the ongoing commitment to Smart City vision and Sustainability, it is proposed that spare ducts and drawpits shall be incorporated into the design development of the Streetscape works. These spare ducts shall allow future installations to be undertaken with minimal disruption to the Union Street area.

ACC have a net zero carbon target for 2045 and are actively engaging with developments, including Streetscape, to help contribute to this target figure and an expectation for options to reduce energy usage and carbon emissions to be included within the Streetscape development. We have engaged with ACC Smart City and

Sustainability team members who have confirmed that ACC street lighting installations were being replaced with LED luminaires and intelligent lighting controls.

It was also advised by ACC that it is unlikely that any Electric Vehicle Chargers will be required in the proposed development and that any bike / car rental clubs will not require infrastructure installed to support their operational requirements.

Our current list of options for consideration are as follows:

- **Kinetic Pavements:** Interactive off-grid energy generation – engaging the community in decarbonising Aberdeen.
- **Solar powered signage and bus stop shelters:** Offsets energy demand via local energy generation and supports ACC's transition to a low carbon future.
- **Bus / Cycle Shelters:** Digital shelters promote sustainable travel and can be combined with PV panels (local off-grid energy generation) or green roofs (help improve air quality and biodiversity in the city).
- **Smart Media Hub:** Promotes sustainable transport / active travel via maps, walking routes and travel time data. Local environmental data can be shared. Hubs can include charge point or link or emergency systems.

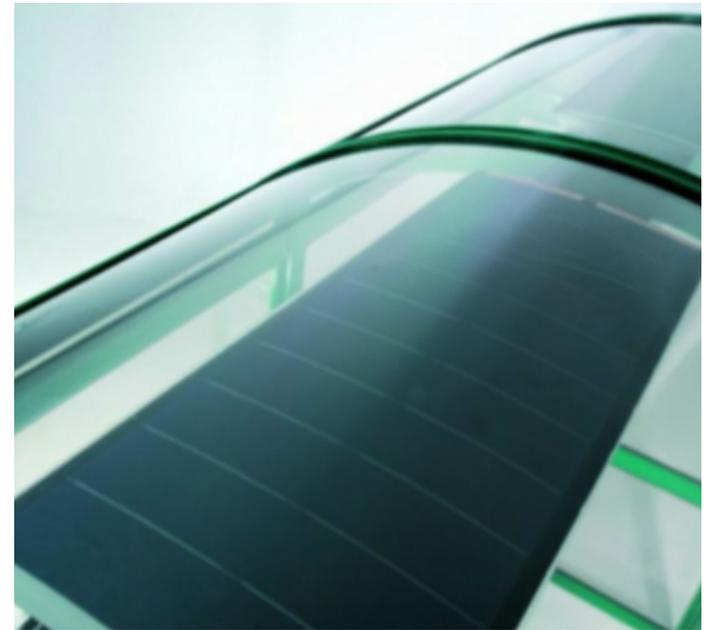
- **Cycle Counter:** Monitors and reports sustainable transport data in regards to ACC's transport targets.
- **Digital Totems:** Can be programmed to display a variety of information (local maps, travel timetables, wayfinding, local data or advertising). Totems can also include charge points or link to emergency systems.
- **Feature Lighting:** Proposed Public Artwork will be provided with new LED lighting and interactive controls. It is likely new interactive lighting will be provided with intelligent controls and interfaced with existing ACC controls systems.

ACC are keen to encourage the use of Aberdeen Heat and Power (AHP) local District Heating network to support city centre projects and, as part of Streetscape project, consideration should be given to installation of district heating pipework within footpaths, roadways and at road crossings to limit future disruption.

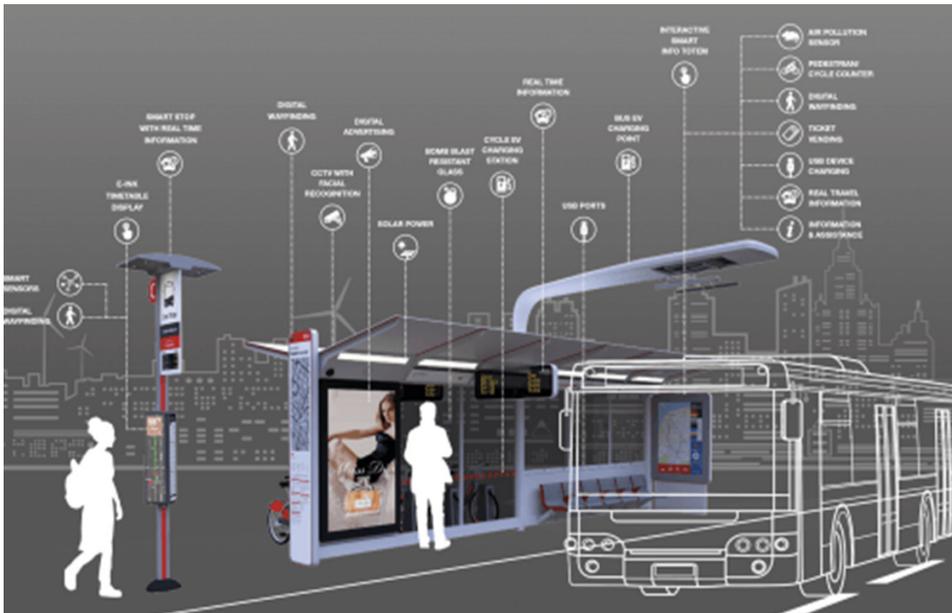
The use of AHP infrastructure may well assist in reducing carbon emissions as the infrastructure will encourage businesses to connect thereto in the future.



Kinetic Pavements



Solar powered signage and bus stop shelters



Bus / Cycle Shelters

**Smart Media Hub** Ref: 36 014.4

### Smart Media Hub

**The next generation of urban infrastructure, creating dynamic and intelligent streetscapes.**

Transform public life-connected, highly intelligent, SmartCity streetscape Infrastructure networks for city streets, public transport and public spaces.

Our network of people centred, smart, sustainable Info Hub kiosks incorporate the latest digital display and communication technologies, enabling the smarter, greener and more efficient movement of data, information, communications media and people around the World.

We design, manufacture and deploy interactive digital kiosks, which incorporate pioneering digital display, communication and technology solutions, to provide a network of user info hubs - thus providing a hyper-connected streetscape.

Working together, these kiosks provide powerful, media rich communication hubs which transform cities, communities and businesses.





Smart Media Hub

### Cycle Superhighway Counter

**Trueform are proud to have developed a Smart Digital Cycle Totem to monitor cycle flow for TfL's Cycle Superhighway Scheme.**

The counter features the very latest low-power LED technology and, when linked to photo-eye sensor systems, provides real-time updates of cycling usage. The counter displays information in the form of daily and cumulative counts of cyclists, a smart way to promote other forms of travelling in cities and to encourage a healthier lifestyle.

TfL, Trueform and 888 Teamer, Mayor of London Walking & Cycling Commissioner, launched the first system in Fitzrovia and Stockfish. With over 300 cycles recorded within the first hour of going live, this demonstrates the investment that is being put into walking & cycling is beneficial to achieving active travel, reducing levels of vehicle congestion and pollution.



Cycle Counter

### Future Cities Catapult - Birmingham Digital Totems

**Trueform was appointed by Future Cities Catapult as a suitably experienced and capable supplier, to design, manufacture and install a technology totem 'Totem'.**

The technology totem 'Totem' is a mobile kiosk. It contains a selection of wireless hardware, an in-glass 32" display and facility to harness renewable energy in the form of solar. The totem measures the movements, and engages with the public, via dynamic on-screen content through wireless connectivity.

The first totem was installed in London and the second totem in Birmingham, built on a redundant loading bay within a parklet creating green urban environment.

The 8 month trial of 'Totem' is to monitor footfall, dwell time and how technology can be used to improve business. The area was monitored before parklet was installed and will be monitored during the trial to see how people react to the new open space. The sensing equipment built into the totem includes thermal imaging, air pollution, pedestrian & cycle counting, vibration levels, proximity sensor, voice activation and interacts with the public to offer an insight into the past, present and future of the surrounding area, giving them the option to vote for future plans within the city.

The opening of the parklet took place on 18<sup>th</sup> October and was well attended and generated a lot of interest from members of the public and was also featured on BBC radio4 news.

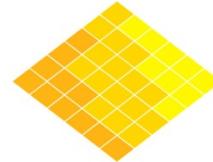


Digital Totems

# Appendix 4

## Union St Central M&E Outline Strategy

DSSR | CONSULTING ENGINEERS



**PROJECT | ABERDEEN CITY VISION, STREETSCAPE WORKS  
UNION STREET CENTRAL**

**M&E SERVICES  
OUTLINE STRATEGY**

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P0	11/10/21	Draft for Review	First Issue

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## 1 INTRODUCTION

This high-level M&E services strategy has been produced in order to provide an indication of the proposed works associated with Union Street Central area of the Streetscape works.

The purpose of this document is to allow review and comment by all parties in order that it can be developed and modified as appropriate. The document can also act as an agreed basis for future design development as the project progresses.

The new Union Street Central development is proposed to comprise of a paved, pedestrianised zone with new street furniture, planters and cycle stands.

## 2 EXISTING UTILITIES

### 2.1.1 *Gas*

#### **Existing Services & Planned Works**

There is existing low pressure gas infrastructure along the length of Union Street Central which is owned and operated by Scottish Gas Networks (SGN). SGN have been contacted and confirmed that at present there are no planned works within the Union Street Central development area.

#### **Diversions & Temporary Protection**

The exact scope of planned works within Union Street Central needs to be developed further to understand whether any diversions will be required as part of the proposed works.

It does not appear, based on the proposed change in ground levels, that the existing gas infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to SGN assets.

### 2.1.2 *Aberdeen Heat & Power (AHP)*

#### **Existing Services & Planned Works**

There are no existing Aberdeen Heat & Power (AHP) assets within the Union Street Central area.

AHP noted on 8<sup>th</sup> September '21 that discussions were underway to connect the Aberdeen Market onto their network which would require co-ordination with the Streetscape team to align. If required then this would likely entail routing pipework from the Townhouse/Marschial College area along Union St East section and into the Union St Central area, or potentially via Market Street. However, whether the Market development requires this District Heating connection has yet to be determined.

### **Diversions & Temporary Protection**

There is no existing District Heating pipework within this area and therefore no proposed diversion works or temporary protection measures associated with existing AHP equipment

#### **2.1.3 Power**

##### **Existing Services & Planned Works**

There are existing high voltage, low voltage and fibre optic cabling associated with local electricity DNO, Scottish & Southern Energy Networks (SSEN), in Union Street Central zone.

SSEN confirmed on 13<sup>th</sup> September '21 there are no other planned works within the proposed zone.

However, as part of the planned development, we anticipate existing bus shelter supplies will be required to be removed / relocated and new supplies will be required pop-up events and feature lighting.

##### **Diversions & Temporary Protection**

The exact scope of planned works within Union Street Central needs to be developed further to understand whether any diversions will be required as part of the proposed works.

Due to the extent of existing SSEN assets in the proposed development area, it is likely diversions will be required locally where clashes with new equipment cannot be avoided. Co-ordination with cycle stands, planters and sustainable urban drainage system (SUDS) etc. will be required to minimise diversion works.

It does not appear, based on the proposed change in ground levels, that the existing SSEN infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to SSEN assets.

#### **2.1.4 Water**

##### **Existing Services & Planned Works**

There is existing water infrastructure within the Union Street Central area of the development which is under ownership of Scottish Water (SW).

SW have yet to confirm if there are any planned works within Union Street Central zone.

As part of the planned development, we anticipate water supplies may be required to bib taps for planter irrigation systems associated with the proposed planters. We understand that there are no water features planned for public art attraction or otherwise which would require a water connection.

### **Diversions & Temporary Protection**

The exact scope of planned works of the Streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works.

However, it is likely that existing water valve chambers may require relocation to avoid proposed street furniture layout.

It does not appear, based on the proposed change in ground levels, that the existing Scottish Water infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to SW assets.

### **2.1.5 Telecoms**

#### **2.1.5.1 BT Openreach**

##### **Existing Services & Planned Works**

There is existing British Telecom (BT) Openreach infrastructure within Union Street Central area.

We have contacted BT Openreach to determine any planned works, however, we have yet to receive confirmation if there are any planned works in Union Street Central.

##### **Diversions and Temporary Protection**

The exact scope of planned works of the Streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works.

However, it is likely that existing drawpit chambers may need relocated as part of the overall scheme.

It does not appear, based on the proposed change in ground levels, that the existing BT infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to BT assets.

#### **2.1.5.2 City Fibre**

##### **Existing Services & Planned Works**

There are no City Fibre assets within the Union Street Central area.

City Fibre have yet to confirm if any planned works are proposed within the Union Street Central area.

#### **Diversions and Temporary Protection**

As there are no City Fibre assets within the Union Street Central area, no diversions or temporary protection measures will be required.

#### **2.1.5.3 Vodaphone**

##### **Existing Services & Planned Works**

There is existing Vodaphone infrastructure within the Union Street Central area of the project.

Vodaphone have confirmed there are no planned works associated with their equipment within the development zone.

##### **Diversions and Temporary Protection**

The exact scope of planned works of the Union Street Central streetscape needs to be developed further to understand whether any diversions will be required as part of the proposed works.

However, it is likely that existing drawpit chambers will need relocated as part of the overall scheme.

It does not appear, based on the proposed change in ground levels, that the existing Vodaphone infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to Vodaphone assets.

#### **2.1.5.4 Neos Networks**

##### **Existing Services & Planned Works**

There are no Neos Networks assets within the Union Street Central area.

Neos Networks requested ACC IT were contacted directly to advise of planned works, who subsequently advised there are no planned works within the Union Street Central area.

##### **Diversions and Temporary Protection**

As there are no Neos Networks assets within the Union Street Central area, no diversions or temporary protection measures will be required.

### 2.1.5.5 Smart City / Sustainability

#### Existing Services & Planned Works

There are existing ACC Smart City and Sustainability below ground services in the Union Street Central development zone.

ACC have confirmed that there are planned street lighting upgrades, however, all these works relate to above ground services and should not impact on the Union Street Central scope of works. Refer to Section 3 below for further details.

ACC have requested spare ducts on either side of Union Street Central, including road crossings, should be provided as part of the development. This will allow future Smart City and Sustainability upgrade works with minimal disruption to Union Street. Refer to Section 4 below for further details.

#### Diversions and Temporary Protection

It does not appear, based on the proposed change in ground levels, that the existing ACC Smart City infrastructure will require major diversions or deepening of services. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to ACC assets.

## 3 STREET LIGHTING

Through discussions with Aberdeen City Council (ACC), it has been confirmed that the existing street lighting throughout Aberdeen City Centre is currently being upgraded to Light Emitting Diode (LED) technology. These works are being undertaken directly by ACC and not included within the scope of works of the Streetscape project.

Within Union Street Central area, the street lighting installation consists of wall mounted luminaires, cables etc. which shall remain in situ during the planned upgrade works and for the duration of the Streetscape project.

There are no below ground works associated with the street lighting upgrade within Union Street Central section. However, the construction works may temporarily reduce ground cover and therefore temporary protection measures shall be employed to mitigate any potential risk to ACC street lighting assets.

It is proposed that Union Street Central shall incorporate Public Art and, as part of this, feature lighting will be provided.

Where public art attractions and interactive displays are to be provided, LED lighting complete with intelligent lighting controls shall be installed and monitored via ACC street lighting central control centre.

New external lighting supplies shall be provided with new below ground ducts and, where possible, fed from existing local feeder pillar. Where new feeder pillars are required, these shall be concealed in a discreet but accessible location to suit the proposals.

## 4 SMART CITY / SUSTAINABILITY

As part of ACC's ongoing commitment to Smart City vision and Sustainability, it is proposed that 2no. green 100mm internal diameter (110mm external diameter) spare ducts in the footpath and 600x450mm drawpits shall be incorporated into the design development of the Union Street Central. It was also requested that spare ducts at major road crossings / junctions are included into the design to minimise disruption in the area. These spare ducts shall connect onto the existing below ground Smart City duct network.

ACC have advised that it is unlikely that any Electric Vehicle Chargers will be required in the proposed development and that any bike / car rental clubs will not require infrastructure installed to support their operational requirements.

In addition to the potential Aberdeen Heat and Power network connection, street lighting upgrades and spare ducts for future Smart City connections, we have tabled a number of sustainability options for ACC to consider for Union Street Central section of the works.

These include...

- Kinetic Pavements: Interactive off-grid energy generation – engaging the community in decarbonising Aberdeen.
- Solar powered signage and bus stop shelters: Offsets energy demand via local energy generation and supports ACC's transition to a low carbon future.
- Bus / Cycle Shelters: Digital shelters promote sustainable travel and can be combined with PV panels (local off-grid energy generation) or green roofs (help improve air quality and biodiversity in the city).
- Smart Media Hub: Promotes sustainable transport / active travel via maps, walking routes and travel time data. Local environmental data can be shared. Hubs can include charge point or link or emergency systems.
- Cycle Counter: Monitors and reports sustainable transport data in regards to ACC's transport targets.
- Digital Totems: Can be programmed to display a variety of information (local maps, travel timetables, wayfinding, local data or advertising). Totems can also include charge points or link to emergency systems.
- Feature Lighting: Proposed Public Artwork will be provided with new LED lighting and interactive controls. It is likely new interactive lighting will be provided with intelligent controls and interfaced with existing ACC controls systems.

## 5 MISCELLANEOUS SERVICES

Further dialogue and co-ordination will be required with ACC and key shareholders in relation to servicing requirements associated with miscellaneous services such as CCTV, ANPR, Traffic Signals, Bus Shelters, advertising panels, decoration supplies, pop-up trading stalls and timed access controls etc.

These items will be addressed during design development stage.

## 6 SUMMARY

Dialogue has been undertaken with utility companies and relevant stakeholders to help ascertain how the services requirements would potentially impact on the overall Union Street Central Streetscape works. This has included meetings with ACC Street Lighting, Roads, Smart City and Sustainability representatives.

In general, the new services requirements associated with the Streetscape works appear to be limited in scope and the services works do not appear to present a major issue to the development. However, the main issue that needs to be addressed is the potential impact on existing utility services associated with the construction works. Although the surface levels are not being permanently lowered there will be some excavation and reinstatement works associated with the new surfaces provision. The detailed extent of the excavation works, along with detailed survey of the existing services (ie via ground radar survey) should be undertaken at the next design stage to help determine if localised services diversions will be necessary and what protection measures are likely to be required during the construction works.

There will also require to be further coordination of proposed works with the existing and proposed below ground services, in particular how any SUDS and street furniture proposals can be integrated to minimise any diversion works.

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# Appendix 5

## Engineering Review

### 1. Introduction

At the 25<sup>th</sup> August 2021 meeting of Aberdeen City Council's City Growth and Resources Committee, the Committee instructed that indicative visioning works for various areas of the City Centre should be developed to detailed design stage including costing, delivery timelines and consultation with key stakeholders, residents and traders in the area. The areas are:

- Union Street Central
- Union Street West and West End
- Union Street East and Castlegate
- Schoolhill and Upperkirkgate

An accelerated design programme was agreed for the Union Street Central section.

This report has been prepared to provide findings to date relating to civil engineering activities that have been progressed in relation to Union Street Central works, which have fed in to the wider design team reporting on project cost, delivery, programme, constraints, consultation and approval requirements.

### 2. Engineering Review

#### 2.1 Ground Conditions and Underground Structures

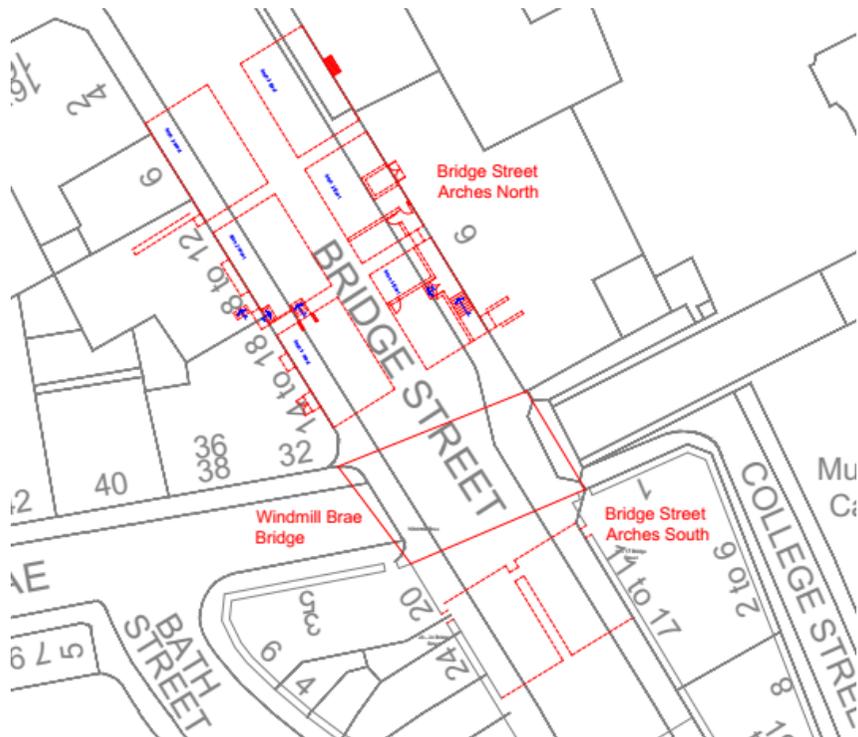
A desk based review of historical information has commenced. The report Appendix contains historical information for the Union Street Central area.

Relevant records have also been received from Aberdeen City Council (ACC). There are existing underground bridge structures and vaults within the Union Street Central section. Figure 1 shows an image of ACC's GIS record of bridge locations.



Figure 1 – ACC GIS Record of Bridges

Arches on Bridge Street, passing beneath Union Street, are shown on Figure 2.



**Figure 2 – Arches Beneath Bridge Street / Union Street**

The location of Union Bridge and associated arches is shown on Figure 3. The depth between existing footway finish level and the supporting structure on Union Bridge is known to be shallow, though depth has not been defined. Lowering the footway finish level on Union Bridge is unlikely to be feasible. Existing footway levels will be retained as much as possible.

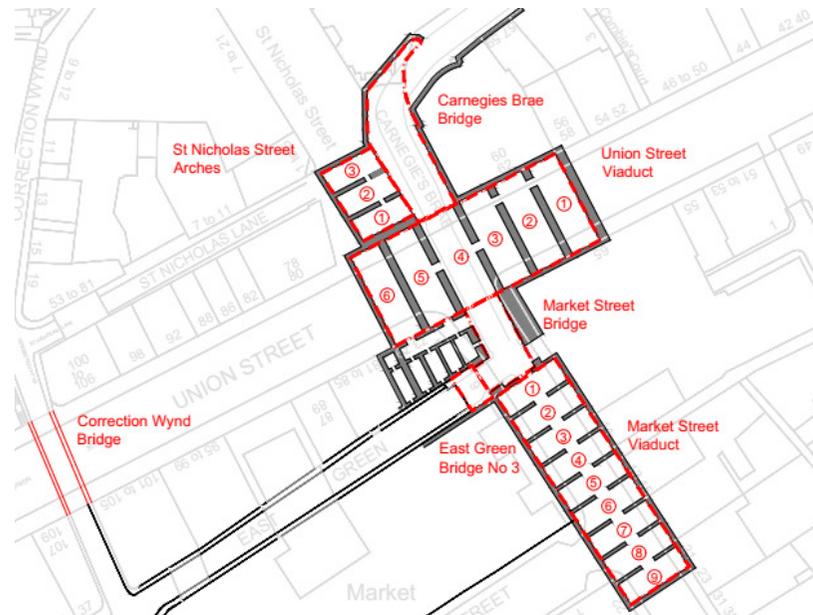
The Union Bridge structure is known to be much weaker over the footways than it is over the carriageway. Therefore the weight of new materials being applied to the footway, or any landscaping features, needs to be considered to ensure the bridge structure is sufficient. The weight of plant required to lift any tree planters in to place also needs to be considered.

There are existing bollards separating the Union Bridge footways and carriageway to prevent vehicle overrun on the weakened footway areas. Bollards or street furniture to restrict vehicle overrun should remain in place within the new public realm scheme.



**Figure 3 – Union Bridge and Associated Arches**

Correction Wynd Bridge and viaducts at Union Street / Market Street are shown on Figure 4.



**Figure 4 – Correction Wynd Bridge and Union Street / Market Street Viaducts**

Existing underground structures will need to be respected in relation to proposed construction, loadings and passage of services. Existing waterproofing systems for these structures and vaults will also need to be retained. Detailed overlaying of proposals will be required to establish potential impacts.

Some properties also have extended basements coming out below Union Street footpaths.

The historic construction make-up of Union Street is unknown. It may contain generally unsuitable material for constructing the road over.

The principal of the new construction will be to keep above and within the depth of current, 'modern' road finishes so as to minimise the risk of penetrating into unsuitable materials and also clashing with historic buried structures and utilities.

Intrusive Site Investigations will require to be undertaken to establish the physical presence of these issues. The extent of intrusive Site Investigation required is being designed and scoped with suitable contractors. There will be some disruption to the operation of Union St during these works, which will require Traffic Management measures to be in place.

## 2.2 Public Realm Construction

The exact construction make-up of the Public Realm areas is yet to be finalised, especially within carriageway areas where traffic loading is required. Experience gained on the Broad Street Public Realm works is being brought to bear on the re-development of Union Street. Replacing the existing flexible road construction with a rigid Public Realm construction is likely to mean that the entire existing road box will need to be removed and replaced. Intrusive Site Investigation works are required to confirm the existing construction make-up and depth to structures beneath, which in turn will dictate construction make-up and finished levels.

Public Realm construction will be in accordance with '*BS7533-101 Pavements constructed with clay, concrete or natural stone paving units - Part 101. Code of Practice for the structural design of pavements using modular paving units*'. BS7533-101 was recently revised and released in August 2021. The design implications of the revised British Standard are being reviewed for application at Union Street. This includes materials depths, laying patterns, bedding, joints, expansion joints, material interfaces and detail around ironworks.

The intended use of Union Street Central has a critical bearing on the design of the Public Realm. The use of 150mm deep setts has been assumed, and the scheme has been costed based on that. In accordance with BS7533-101, the use of 150mm deep setts is suitable for locations which will carry up to 1,000 standard axles per day, which would equate to around 300 vehicles. If traffic levels were to be over that value, the use of 180mm deep setts is recommended.

In footway areas, shallower flagstones are proposed. These can carry traffic loads of up to 350 standard axles per day, which equates to around 100 vehicles. This is suitable for occasional vehicle over-run.

The construction make-up required for carriageway and footway areas will depend on the findings of Site Investigation works and soil bearing capacity testing. Typical construction make-up details are contained on Fairhurst drawing number 143948/sk0001 Contained in the report Appendix.

A levels exercise is yet to be undertaken. Footways are to be widened which will mean they are extended into the Union Street carriageway. Kerb and channel levels will need to be carefully reviewed due to required footway crossfalls and carriageway cambers. This may result in crossfalls and cambers having to be altered, or finished levels being amended.

## 2.3 Surface Water Drainage

It is anticipated that the existing strategic drainage infrastructure and regime will be maintained for use as part of these works. Where existing assets require to be upgraded by authorities, coordination will be sought. However, other than the actual surface drainage details, such as channels and gullies, it is anticipated that existing main infrastructure will continue to serve the overall drainage of the area.

Surface water run-off within the project area is collected in gullies and drained to combined sewers in Union Street. The sewer network discharges to the North Sea at Nigg Bay, via Waste Water Treatment Works. The Scottish Water sewer network is shown in the report Appendix.

Dialogue with Scottish Water will commence once design details are finalised. Discussion with Scottish Water can be a lengthy process, depending on the complexity of any changes required to the sewer network. This is likely to be limited to changes in the location and / or number of gullies, which may require additional connections to spine sewers.

The production of the Stage 2 Report will form the basis for more detailed consultation and liaison with the various statutory authorities, primarily including the Council and Scottish Water. Where asset management works are considered required to be undertaken to suit these authorities, meaningful management and coordination will require to be undertaken. This will potentially include construction phase mitigation works.

## 2.4 Construction Programme and Approvals

The project will require various consents. From a civil engineering perspective, this will include Section 56 Road Construction Consent (granted by ACC) and Technical Approval for any drainage changes (granted by Scottish Water). Traffic Regulation Orders will be required to change the intended use or restrictions that apply to any road. These would be granted by ACC, following statutory processes.

Advice on the timing required for approvals has been included within the construction programme.

## Appendix A

### Historical Geo-Environmental Information

#### Drawing 143948/sk0001 – Hard Landscaping Details

#### Scottish Water Sewer Network

# Historical Mapping Legends

## Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

**Quarry**   **Gravel Pit**   **Sand Pit**  
**Clay Pit**   **Shingle**   **Refuse Heap**  
**Sloping Masonry**   **Flat Rock**  
**Marsh**   **Reeds**   **Osiers**  
**Rough Pasture**   **Furze**   **Wood**  
**Mixed Wood**   **Brushwood**   **Orchard**  
**Fir**   **Ford**   **Stepping Stones**  
**Ferry**   **Waterfall**   **Lock**  
**Trig. Station**   **Altitude at Trig. Station**  
**Bench Mark**   **Surface Level**  
**Arrow denotes flow of water**   **Antiquities (site of)**  
**Cutting**   **Embankment**  
**Railway crossing Road**   **Level Crossing**   **Road crossing Railway**  
**Railway crossing River or Canal**   **Road over single stream**   **Road over River or Canal**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Administrative County & Civil Parish Boundary**  
**County Borough Boundary (England)**  
**County Borough Boundary (Scotland)**  
**Boundary Post or Stone**   **Police Call Box**  
**Bridle Road**   **Pump**  
**Electricity Pylon**   **Signal Post**  
**Foot Bridge**   **Sluice**  
**Foot Path**   **Spring**  
**Guide Post or Board**   **Telephone Call Box**  
**Mile Stone**   **Trough**  
**Mooring Post or Ring**   **Well**

## Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250

**Inactive Quarry, Chalk Pit or Clay Pit**   **Active Quarry, Chalk Pit or Clay Pit**  
**Rock**   **Boulders**  
**Cliff**   **Slopes**   **Top**  
**Roofed Building**   **Glazed Roof Building**  
**Sloping Masonry**   **Archway**  
**Non-Coniferous Tree (surveyed)**   **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)**   **Coniferous Trees (not surveyed)**  
**Orchard Tree**   **Scrub**   **Bracken**  
**Coppice, Osier**   **Reeds**   **Marsh, Saltings**  
**Rough Grassland**   **Heath**   **Culvert**  
**Direction of water flow**   **Bench Mark**   **Antiquity (site of)**  
**Cave Entrance**   **Triangulation Station**   **Electricity Pylon**  
**Electricity Transmission Line**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Civil Parish Boundary**  
**Admin. County or County Bor. Boundary**  
**London Borough Boundary**  
**Symbol marking point where boundary mereing changes**  
**Beer House**   **Pillar, Pole or Post**  
**Boundary Post or Stone**   **Post Office**  
**Capstan, Crane**   **Public Convenience**  
**Chimney**   **Public House**  
**Drinking Fountain**   **Pump**  
**Electricity Pillar or Post**   **Signal Box or Bridge**  
**Fire Alarm Pillar**   **Signal Post or Light**  
**Foot Bridge**   **Spring**  
**Guide Post**   **Tank or Track**  
**Hydrant or Hydraulic**   **Telephone Call Box**  
**Level Crossing**   **Telephone Call Post**  
**Manhole**   **Trough**  
**Mile Post or Mooring Post**   **Water Point, Water Tap**  
**Mile Stone**   **Well**  
**Normal Tidal Limit**   **Wind Pump**

## Large-Scale National Grid Data 1:2,500 and 1:1,250

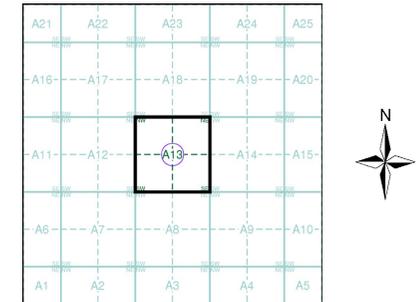
**Cliff**   **Slopes**   **Top**  
**Rock**   **Rock (scattered)**  
**Boulders**   **Boulders (scattered)**  
**Positioned Boulder**   **Scree**  
**Non-Coniferous Tree (surveyed)**   **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)**   **Coniferous Trees (not surveyed)**  
**Orchard Tree**   **Scrub**   **Bracken**  
**Coppice, Osier**   **Reeds**   **Marsh, Saltings**  
**Rough Grassland**   **Heath**   **Culvert**  
**Direction of water flow**   **Triangulation Station**   **Antiquity (site of)**  
**Electricity Transmission Line**   **Electricity Pylon**  
**Bench Mark**   **Buildings with Building Seed**  
**Roofed Building**   **Glazed Roof Building**  
**Civil parish/community boundary**  
**District boundary**  
**County boundary**  
**Boundary post/stone**  
**Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)**  
**Barracks**   **Pillar, Pole or Post**  
**Battery**   **Post Office**  
**Cemetery**   **Public Convenience**  
**Chimney**   **Pump**  
**Cistern**   **Pumping Station**  
**Dismtd Rly**   **Dismantled Railway**   **PW**   **Place of Worship**  
**Electricity Generating Station**   **Sewage Ppg Sta**   **Sewage Pumping Station**  
**Electricity Pole, Pillar**   **Signal Box or Bridge**  
**Electricity Sub Station**   **Signal Post or Light**  
**Filter Bed**   **Spring**  
**Fountain / Drinking Ftn.**   **Tank or Track**  
**Gas Valve Compound**   **Trough**  
**Gas Governor**   **Wind Pump**  
**Guide Post**   **Water Point, Water Tap**  
**Manhole**   **Works (building or area)**  
**Mile Post or Mile Stone**   **Well**

# FAIRHURST

## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Kincardineshire	1:2,500	1867	2
Aberdeenshire	1:2,500	1899	3
Aberdeenshire	1:2,500	1902	4
Aberdeenshire	1:2,500	1926	5
Ordnance Survey Plan	1:1,250	1954 - 1955	6
Ordnance Survey Plan	1:2,500	1955	7
Ordnance Survey Plan	1:1,250	1968 - 1973	8
Ordnance Survey Plan	1:2,500	1970 - 1971	9
Additional SIMs	1:1,250	1977 - 1983	10
Additional SIMs	1:1,250	1981 - 1993	11
Additional SIMs	1:1,250	1984 - 1993	12
Additional SIMs	1:1,250	1987	13
Ordnance Survey Plan	1:1,250	1989 - 1991	14
Large-Scale National Grid Data	1:1,250	1993	15
Large-Scale National Grid Data	1:1,250	1994 - 1995	16
Large-Scale National Grid Data	1:1,250	1994	17
Large-Scale National Grid Data	1:1,250	1995	18
Large-Scale National Grid Data	1:1,250	1996	19
Large-Scale National Grid Data	1:1,250	1996	20

## Historical Map - Segment A13



## Order Details

Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

## Site Details

In Shops Centres Plc, Shop, Aberdeen Market, Market Street, ABERDEEN, AB11 5PA

**Landmark**  
 INFORMATION GROUP

Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk

# FAIRHURST

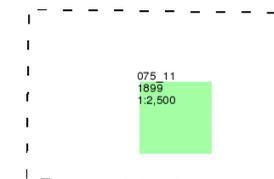
Aberdeenshire

Published 1899

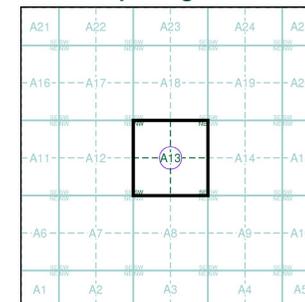
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)



## Historical Map - Segment A13



## Order Details

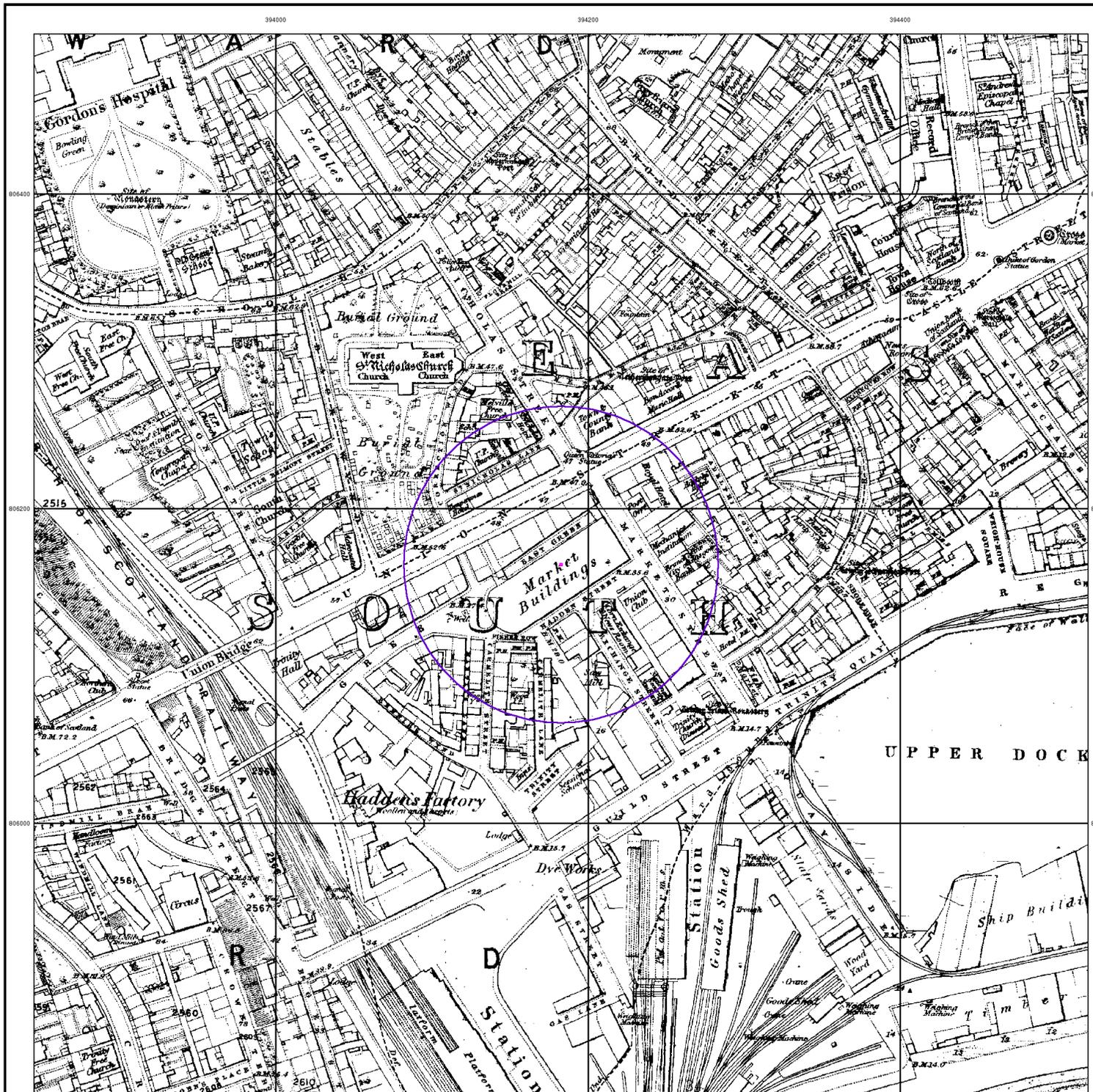
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Customer Ref: 102256  
National Grid Reference: 394180, 806160  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 100

## Site Details

In Shops Centres Plc, Shop, Aberdeen Market, Market Street, ABERDEEN, AB11 5PA

**Landmark**  
INFORMATION GROUP

Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: www.envirocheck.co.uk



# FAIRHURST

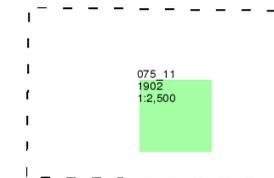
Aberdeenshire

Published 1902

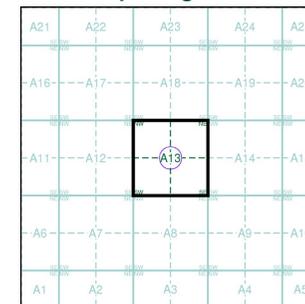
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)



## Historical Map - Segment A13



## Order Details

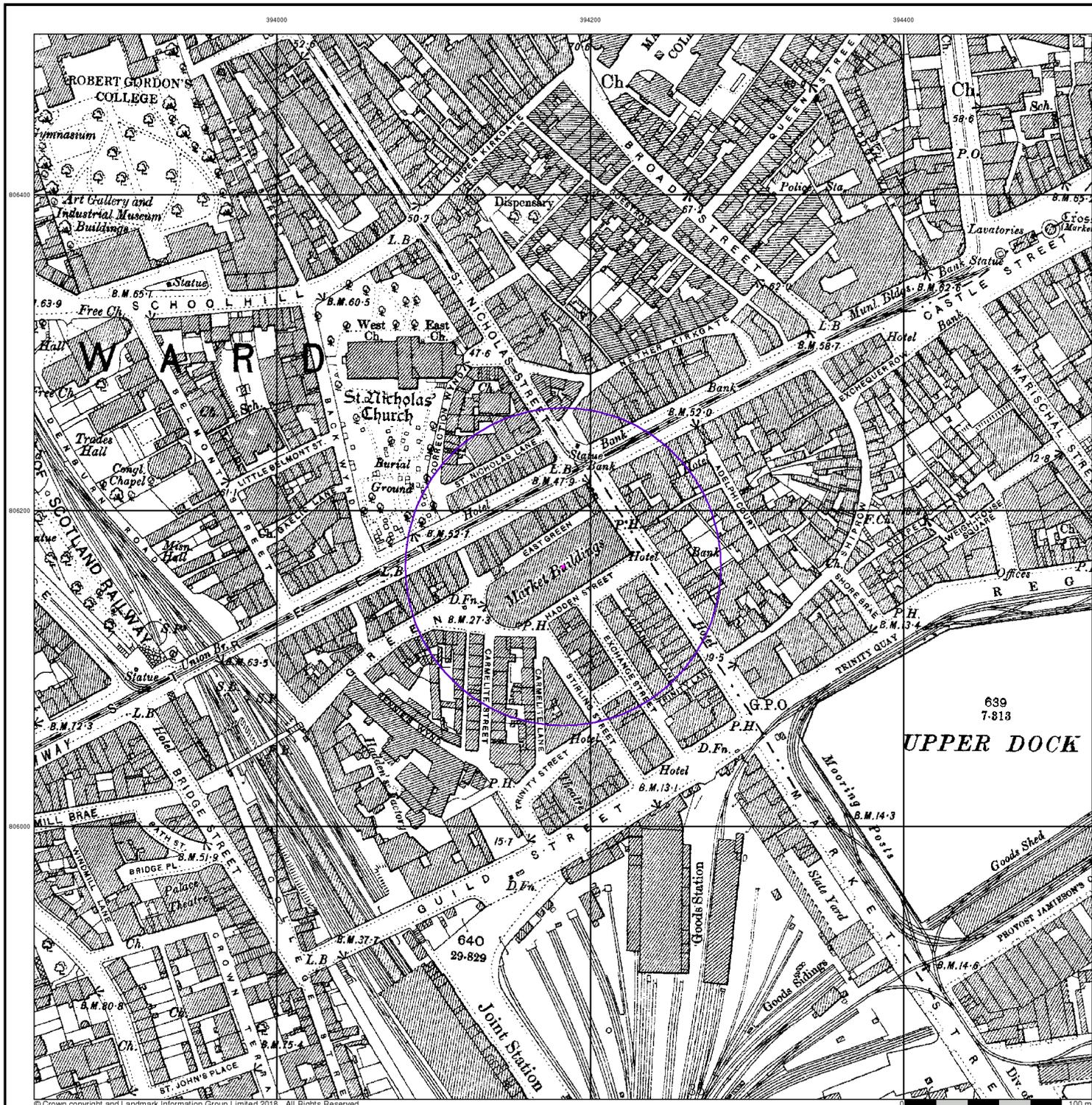
Order Number: 187502267\_1\_1  
Customer Ref: 102256  
National Grid Reference: 394180, 806160  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 100

## Site Details

In Shops Centres Plc, Shop, Aberdeen Market, Market Street, ABERDEEN, AB11 5PA

**Landmark**  
INFORMATION GROUP

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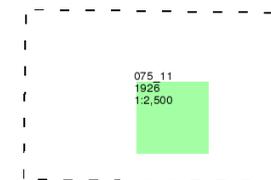
Aberdeenshire

Published 1926

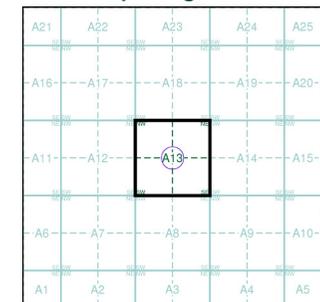
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)



## Historical Map - Segment A13



## Order Details

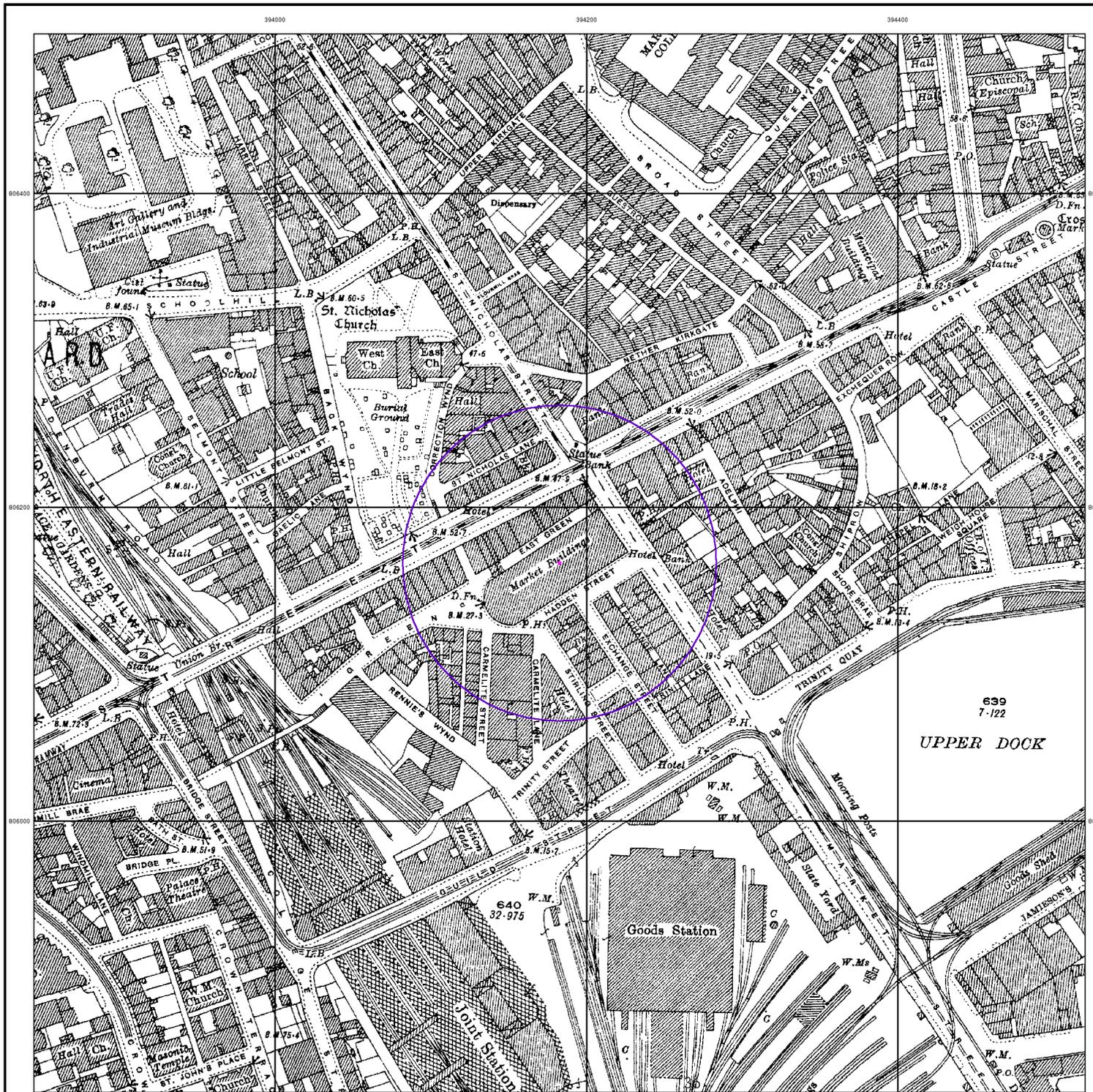
Order Number: 187502267\_1\_1  
Customer Ref: 102256  
National Grid Reference: 394180, 806160  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 100

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# FAIRHURST

## Ordnance Survey Plan

Published 1954 - 1955

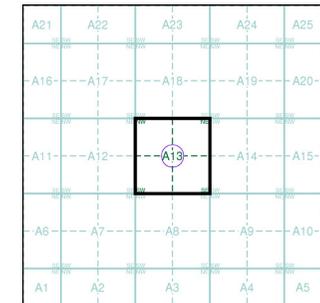
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)

NJ9306NE	NJ9406NW	NJ9406NE
1955	1955	1955
1:1,250	1:1,250	1:1,250
NJ9306SE	NJ9406SW	NJ9406SE
1955	1955	1955
1:1,250	1:1,250	1:1,250
NJ9305NE	NJ9405NW	NJ9405NE
1955	1954	1954
1:1,250	1:1,250	1:1,250

### Historical Map - Segment A13



### Order Details

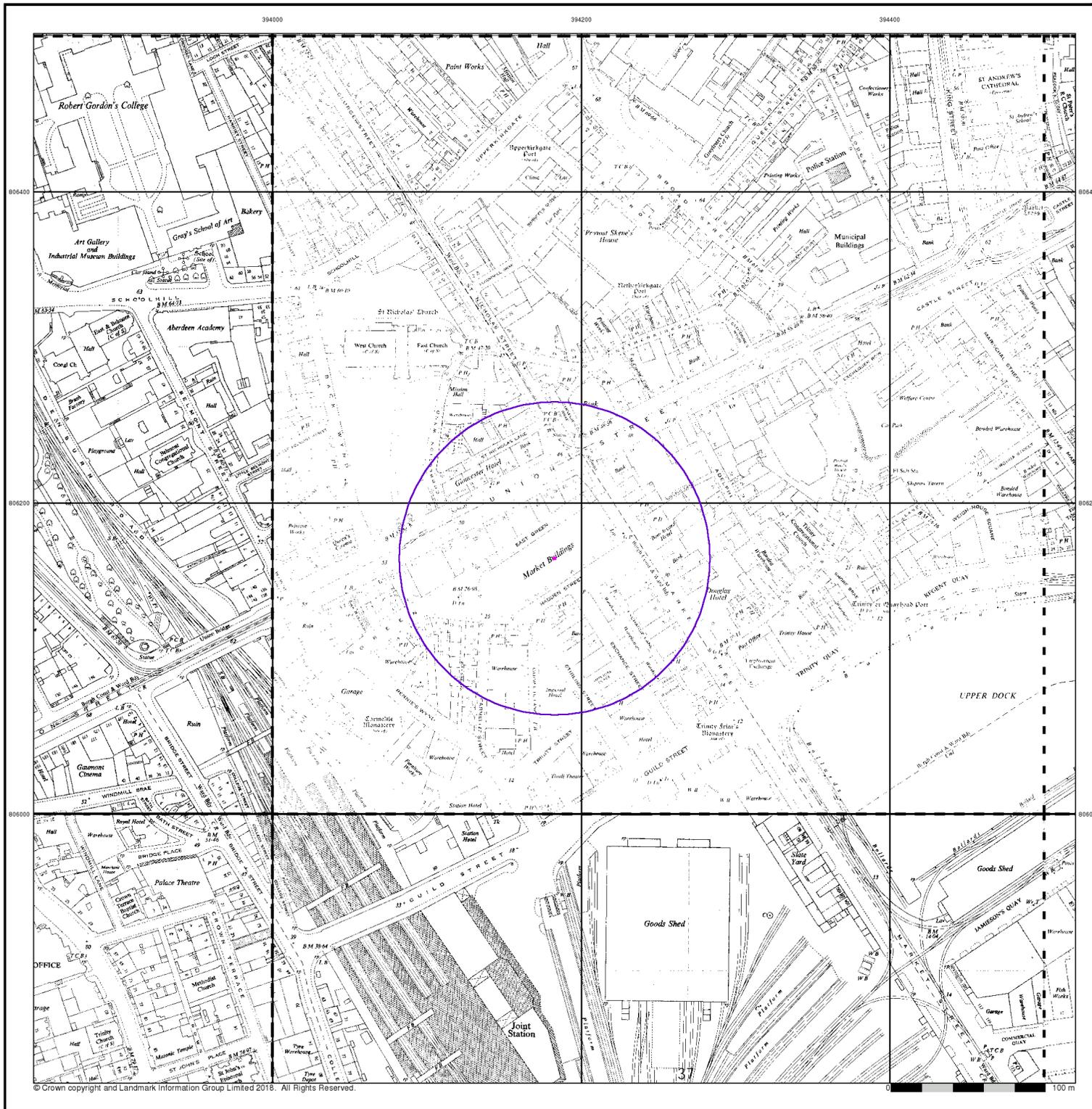
Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

### Site Details

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# FAIRHURST

Ordnance Survey Plan

Published 1955

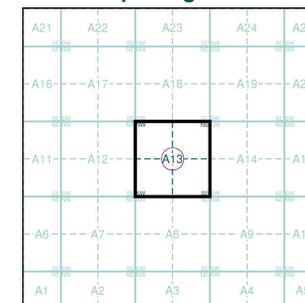
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

## Map Name(s) and Date(s)

NJ9306 1955 12,500	NJ9406 1955 12,500
NJ9305 1955 12,500	NJ9405 1955 12,500

## Historical Map - Segment A13



## Order Details

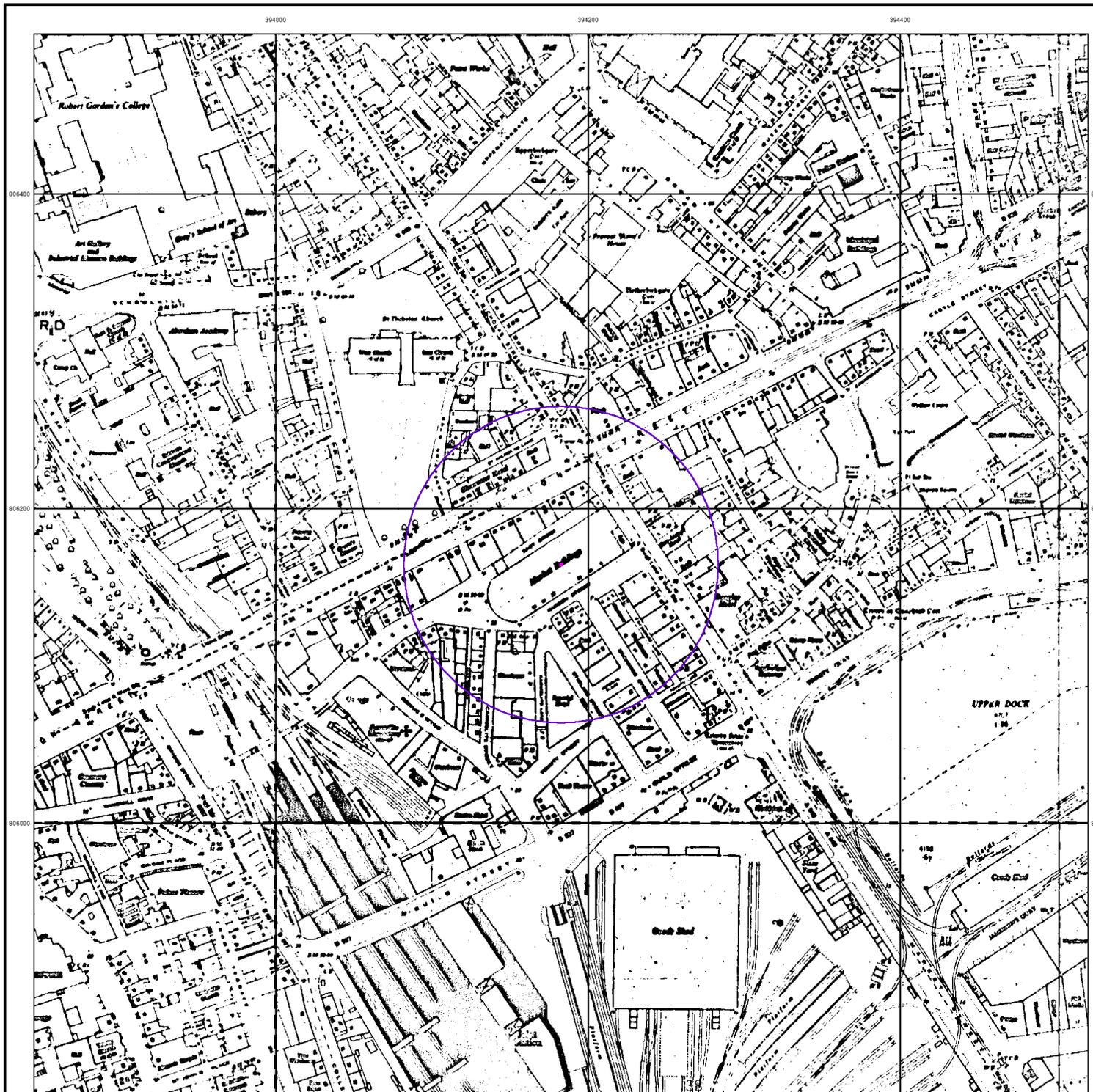
Order Number: 187502267\_1\_1  
Customer Ref: 102256  
National Grid Reference: 394180, 806160  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 100

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# FAIRHURST

## Ordnance Survey Plan

Published 1968 - 1973

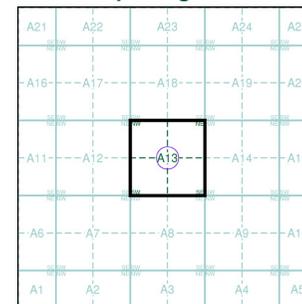
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)

NJ9306NE	1968	1:1,250	NJ9406NW	1968	1:1,250	NJ9406NE	1970	1:1,250
NJ9306SE	1968	1:1,250	NJ9406SW	1973	1:1,250	NJ9406SE	1971	1:1,250
NJ9305NE	1968	1:1,250	NJ9405NW	1968	1:1,250	NJ9405NE	1968	1:1,250

### Historical Map - Segment A13



### Order Details

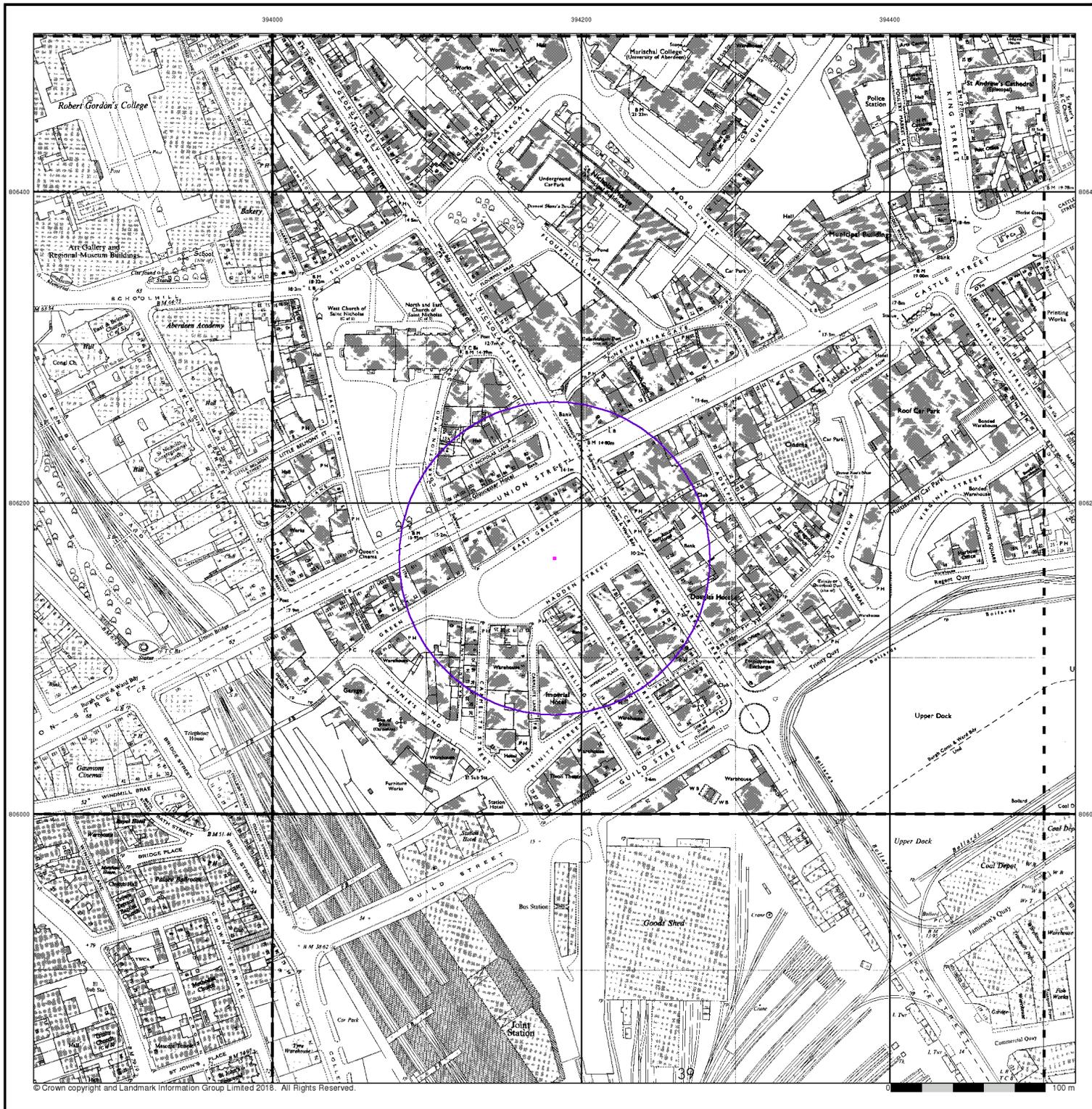
Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

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# FAIRHURST

## Additional SIMs

Published 1977 - 1983

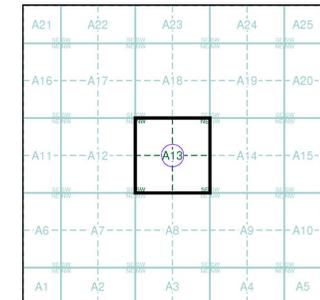
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)

NJ9306NE	NJ9406NW	NJ9406NE
1979	1979	1978
1:1,250	1:1,250	1:1,250
NJ9306SE	NJ9406SW	NJ9406SE
1977	1978	1981
1:1,250	1:1,250	1:1,250
NJ9305NE	NJ9405NW	NJ9405NE
1983	1979	1979
1:1,250	1:1,250	1:1,250

## Historical Map - Segment A13



## Order Details

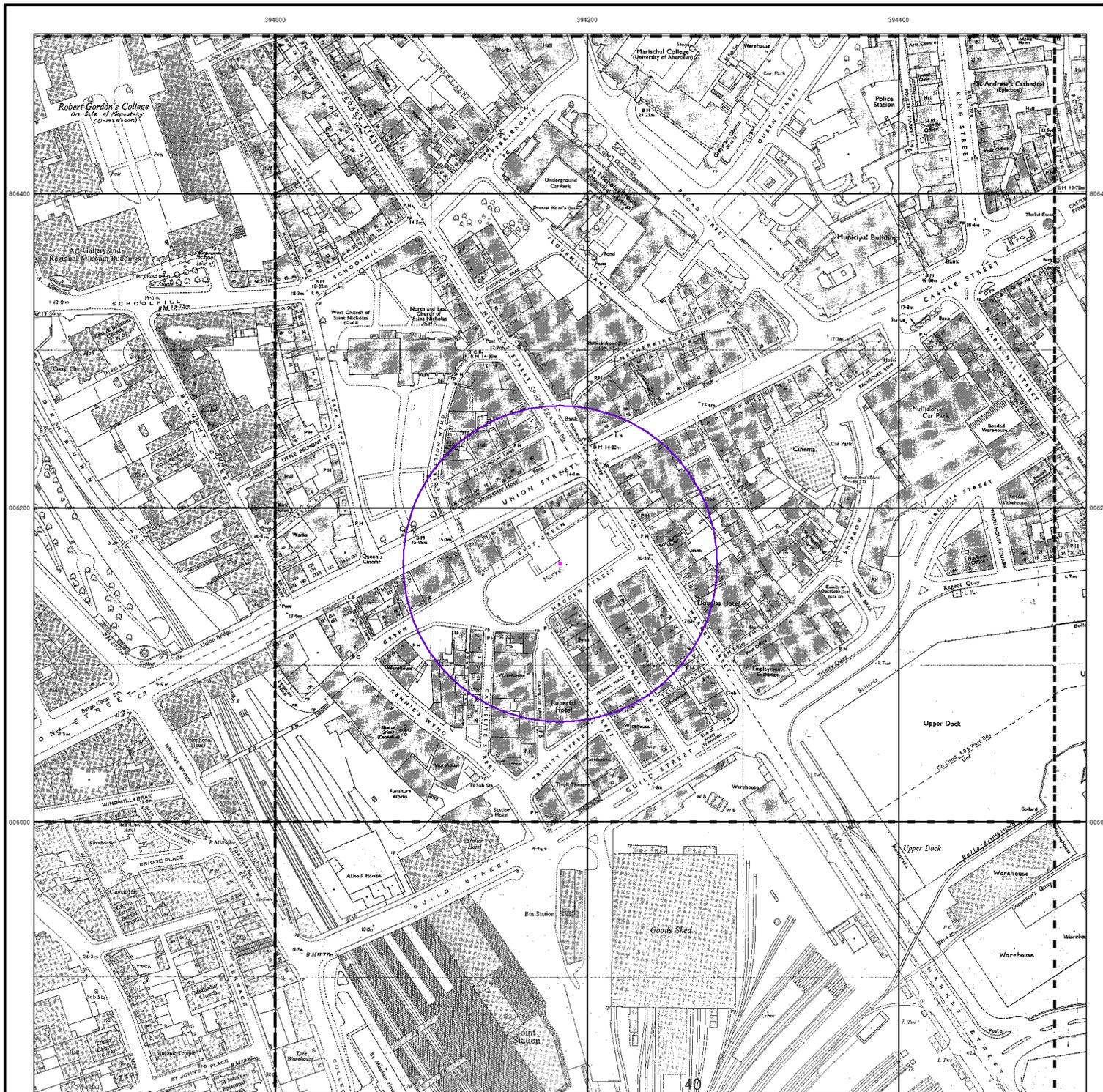
Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

## Site Details

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# FAIRHURST

## Additional SIMs

Published 1981 - 1993

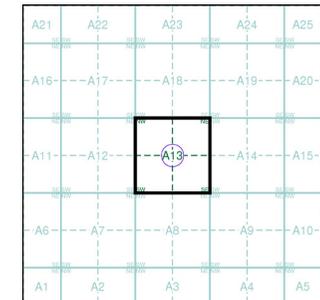
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)

NJ9306NE	NJ9406NW	NJ9406NE
1986	1982	1981
1:1,250	1:1,250	1:1,250
NJ9306SE	NJ9406SW	NJ9406SE
1987	1986	1988
1:1,250	1:1,250	1:1,250
NJ9305NE	NJ9405NW	NJ9405NE
1993	1986	1984
1:1,250	1:1,250	1:1,250

## Historical Map - Segment A13



## Order Details

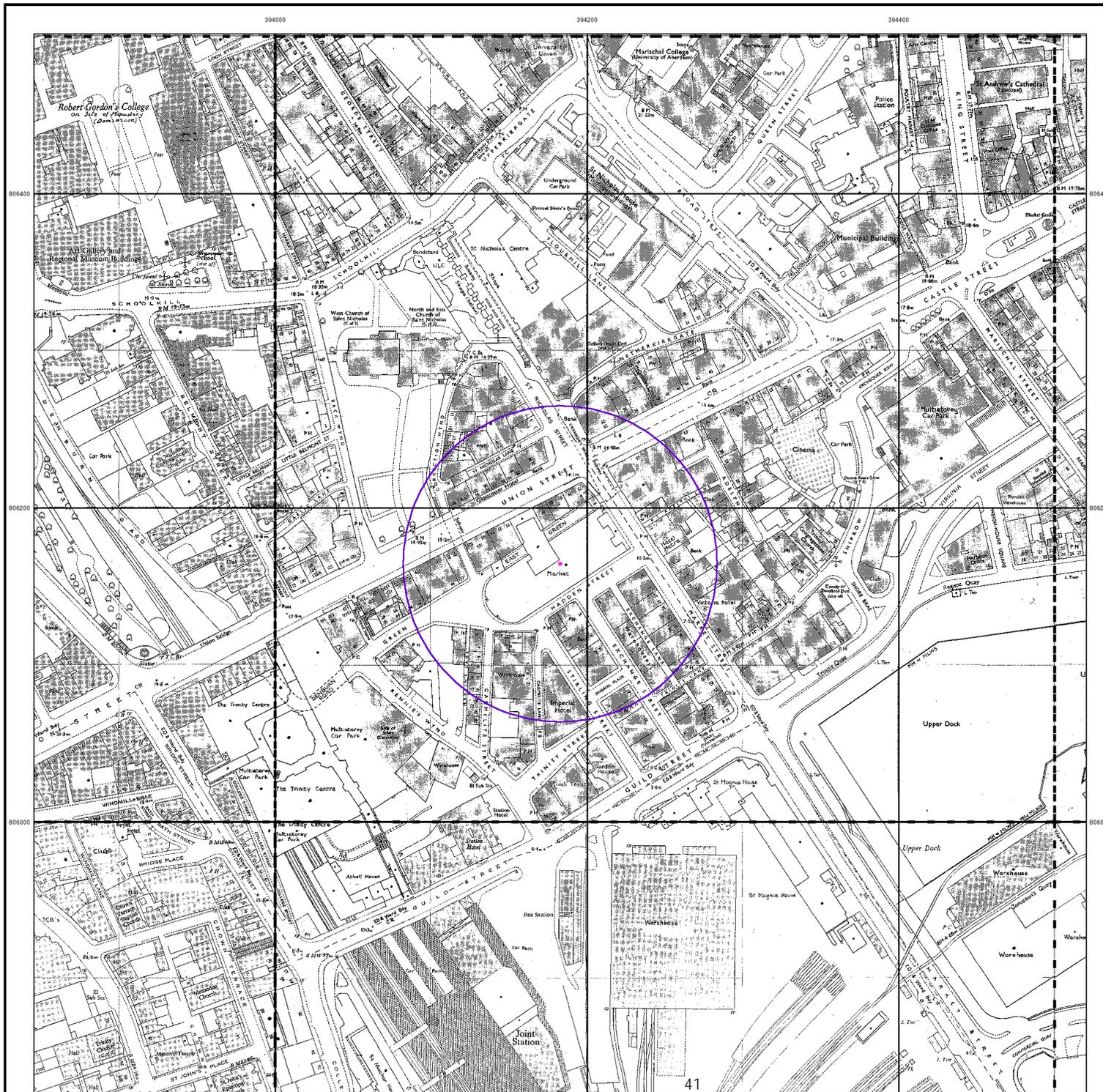
Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

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# FAIRHURST

Additional SIMs

Published 1984 - 1993

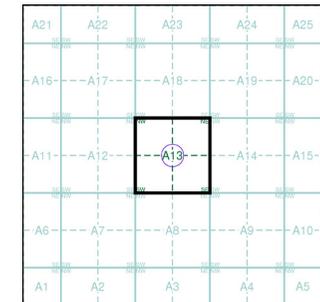
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

NJ9406NW	NJ9406NE
1990	1984
1:1,250	1:1,250
NJ9406SW	
1993	
1:1,250	
NJ9405NW	NJ9405NE
1992	1991
1:1,250	1:1,250

Historical Map - Segment A13



Order Details

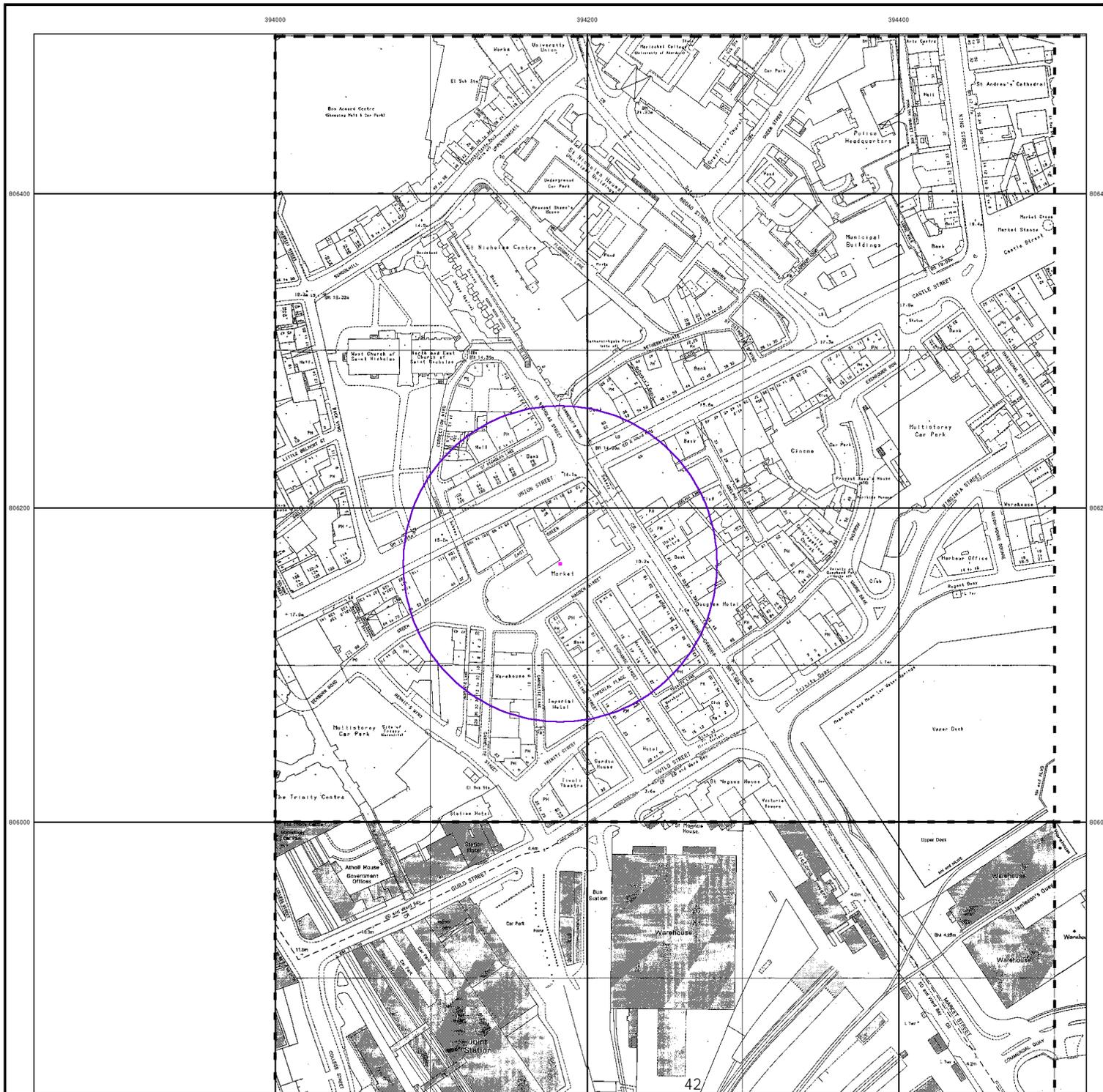
Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

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# FAIRHURST

## Large-Scale National Grid Data

Published 1993

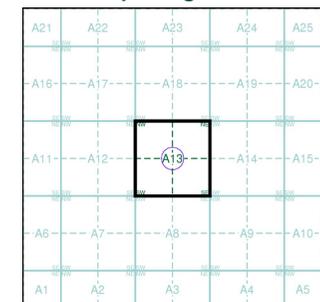
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

### Map Name(s) and Date(s)

NJ9306NE	NJ9406NW	NJ9406NE
1993	1993	1993
1:1,250	1:1,250	1:1,250
NJ9306SE	NJ9406SW	NJ9406SE
1993	1993	1993
1:1,250	1:1,250	1:1,250
NJ9305NE	NJ9405NW	NJ9405NE
1993	1993	1993
1:1,250	1:1,250	1:1,250

### Historical Map - Segment A13



### Order Details

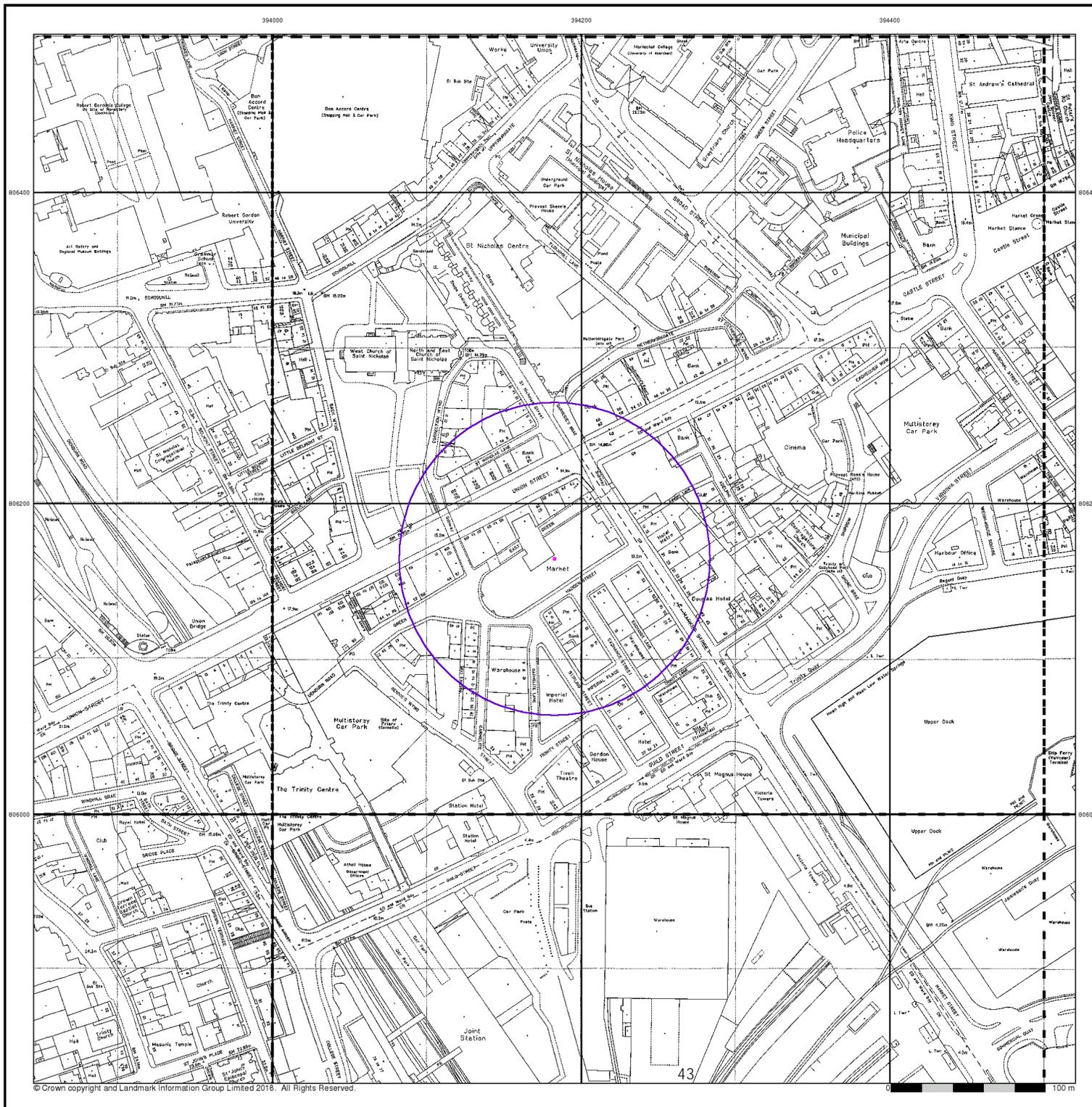
Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

### Site Details

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# FAIRHURST

## Large-Scale National Grid Data

Published 1994 - 1995

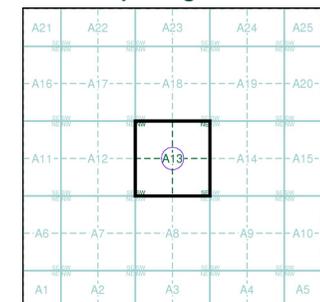
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)

NJ9306NE	NJ9406NW	NJ9406NE						
1994	1995	1995						
1:1,250	1:1,250	1:1,250						
<table border="1"> <tr> <td>NJ9306SE</td> <td>NJ9406SW</td> </tr> <tr> <td>1994</td> <td>1995</td> </tr> <tr> <td>1:1,250</td> <td>1:1,250</td> </tr> </table>			NJ9306SE	NJ9406SW	1994	1995	1:1,250	1:1,250
NJ9306SE	NJ9406SW							
1994	1995							
1:1,250	1:1,250							
<table border="1"> <tr> <td>NJ9405NE</td> </tr> <tr> <td>1994</td> </tr> <tr> <td>1:1,250</td> </tr> </table>			NJ9405NE	1994	1:1,250			
NJ9405NE								
1994								
1:1,250								

## Historical Map - Segment A13



## Order Details

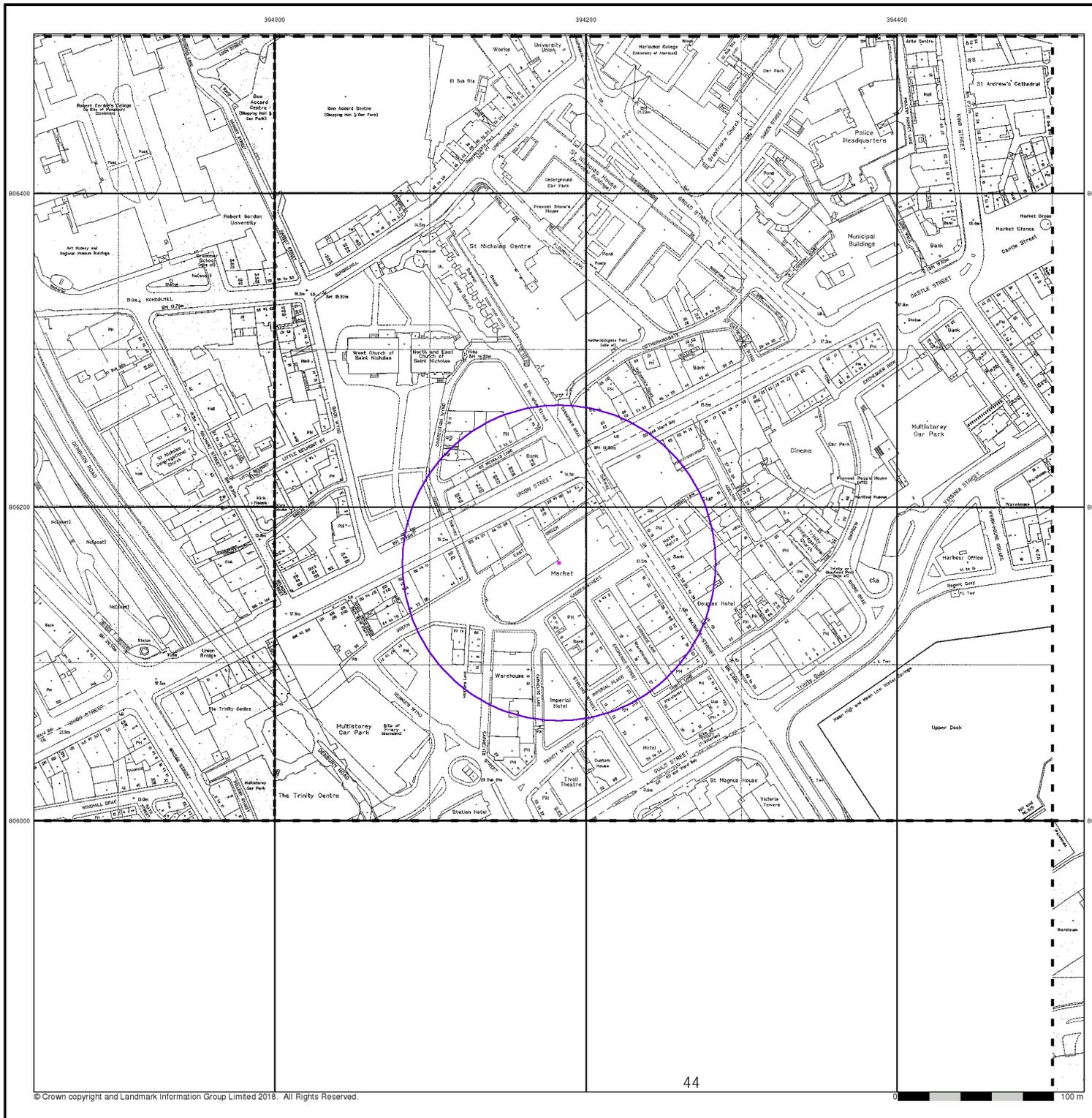
Order Number: 187502267\_1\_1  
 Customer Ref: 102256  
 National Grid Reference: 394180, 806160  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

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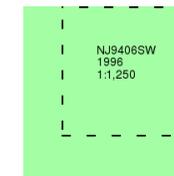
## Large-Scale National Grid Data

Published 1996

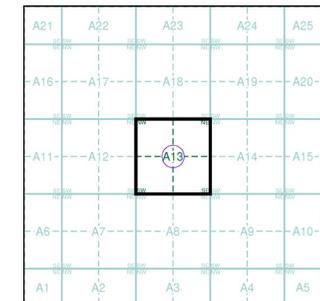
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

### Map Name(s) and Date(s)



### Historical Map - Segment A13



### Order Details

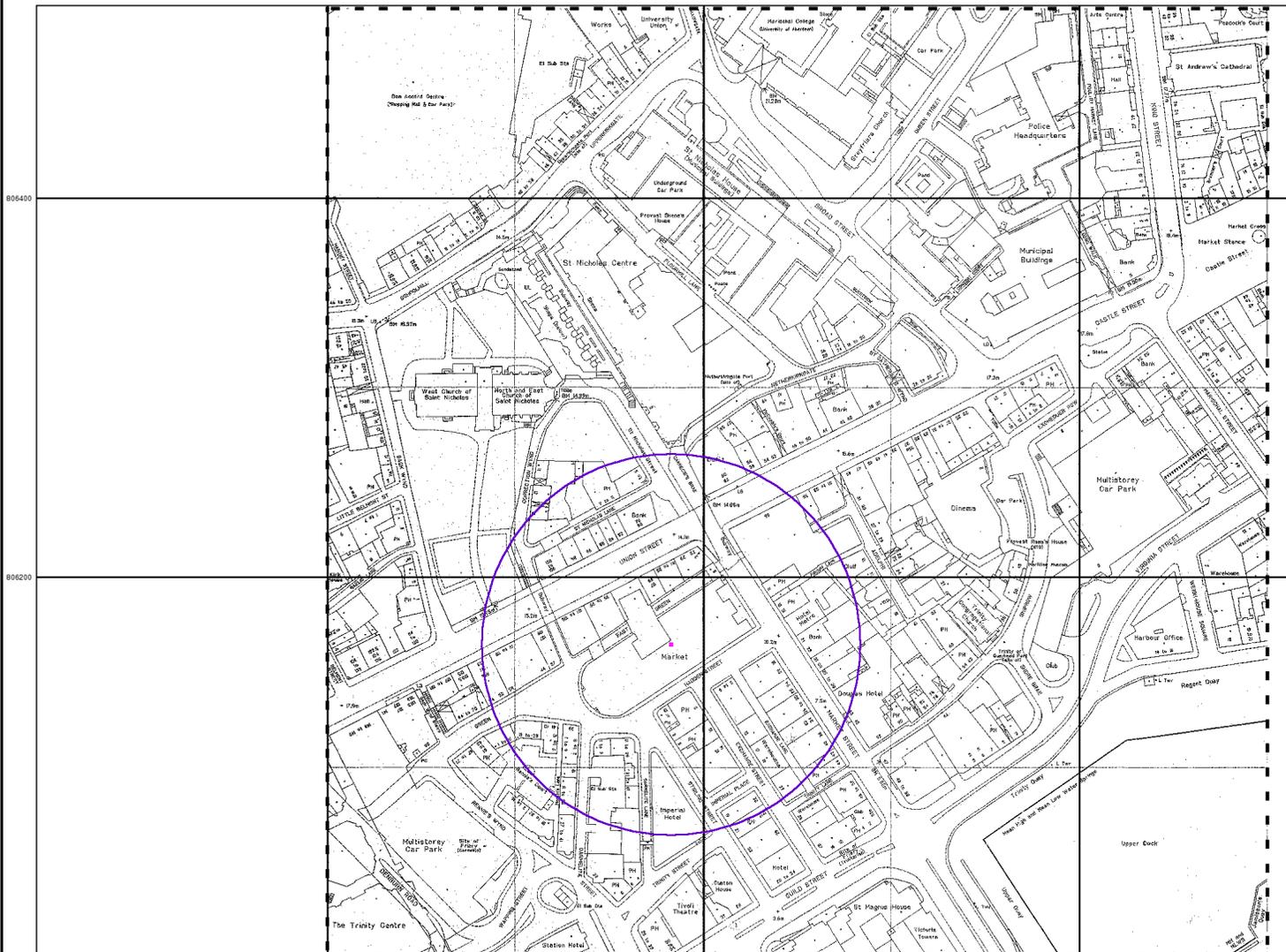
Order Number: 187502267\_1\_1  
Customer Ref: 102256  
National Grid Reference: 394180, 806160  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 100

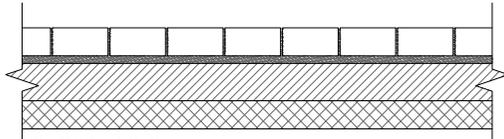
### Site Details

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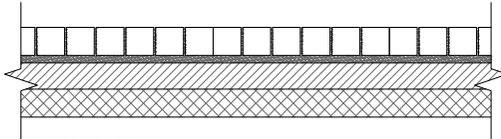




**GRANITE SETTS IN CARRIAGEWAY**  
 150mm WIDE, 200-300mm x 150mm DEEP "ABERDEEN" SETTS (TO BS 7533-7) WITH 10-15mm JOINTS BETWEEN UNITS FILLED WITH 40N/mm<sup>2</sup> MORTAR TO BS 7533-7:TABLE C5. REFER TO ARCHITECTS SPECIFICATION Q25/330A & Q25/330B.  
 40mm FINE CONCRETE LAYING COURSE (SEE NOTE 1).  
 200mm DENSE ASPHALT CONCRETE BASE TO S.H.W. CLAUSE 906 (AC 32 DENSE BASE 70/100).  
 150mm TYPE 1 UNBOUND MIXTURE TO S.H.W. CLAUSE 803.

**NOTES:**  
 THE SETTS SHALL BE BONDED AND EVERY SETT SHALL BE INDIVIDUALLY BEDDED TO GIVE A UNIFORM AND EVEN SURFACE LAID LEVELS OR FALL AS DIRECTED. THE MAXIMUM ALLOWABLE GAP BETWEEN ADJACENT SETTS IS 10-15mm.  
 THE JOINTS BETWEEN THE SETTS SHALL BE FILLED WITH BEDDING MORTAR. AFTER THE JOINTS ARE COMPLETELY SEALED ALL SURPLUS MATERIAL SHALL BE REMOVED.

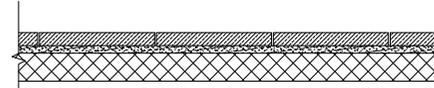
**TYPICAL GRANITE SETTS DETAIL**  
 (SCALE 1:20)



**GRANITE CUBES IN FOOTWAY**  
 150mm x 150mm x 150mm "ABERDEEN" SETTS (TO BS 7533-7) WITH 10-15mm JOINTS BETWEEN UNITS FILLED WITH 40N/mm<sup>2</sup> MORTAR TO BS 7533-7:TABLE C5. REFER TO ARCHITECTS SPECIFICATION Q25/330C.  
 40mm FINE CONCRETE LAYING COURSE (SEE NOTE 1).  
 100mm DENSE ASPHALT CONCRETE BASE TO S.H.W. CLAUSE 906 (AC 32 DENSE BASE 70/100).  
 150mm TYPE 1 UNBOUND MIXTURE TO S.H.W. CLAUSE 803.

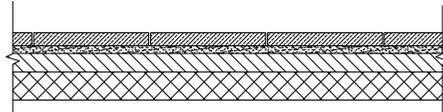
**NOTES:**  
 THE SETTS SHALL BE BONDED AND EVERY SETT SHALL BE INDIVIDUALLY BEDDED TO GIVE A UNIFORM AND EVEN SURFACE LAID LEVELS OR FALL AS DIRECTED. THE MAXIMUM ALLOWABLE GAP BETWEEN ADJACENT SETTS IS 10-15mm.  
 THE JOINTS BETWEEN THE SETTS SHALL BE FILLED WITH BEDDING MORTAR. AFTER THE JOINTS ARE COMPLETELY SEALED ALL SURPLUS MATERIAL SHALL BE REMOVED.

**TYPICAL GRANITE CUBES DETAIL (FOOTWAY)**  
 (SCALE 1:20)



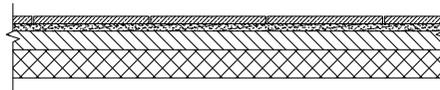
**CONCRETE PAVING**  
 63mm FIBRE REINFORCED CONCRETE PAVING SLAB. 8mm JOINTS FILLED WITH FINE CONCRETE LAYING COURSE (SEE NOTE 1). JOINTS TO BE GUN POINTED. REFER TO ARCHITECTS SPECIFICATION Q25/315A.  
 50mm FINE CONCRETE LAYING COURSE (SEE NOTE 1).  
 100mm DENSE ASPHALT CONCRETE BASE TO S.H.W. CLAUSE 906 (AC 32 DENSE BASE 70/100).  
 150mm TYPE 1 UNBOUND MIXTURE TO S.H.W. CLAUSE 803.

**TYPICAL CONCRETE PAVING DETAIL**  
 (SCALE 1:20)



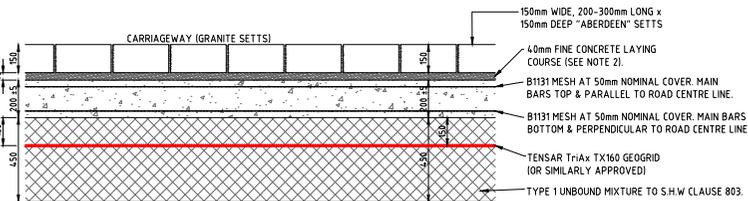
**CAITHNESS PAVING**  
 70mm CAITHNESS PAVING WITH COAT OF BONDING ADHESIVE AND 8mm JOINTS GUN POINTED. REFER TO ARCHITECTS SPECIFICATION Q25/310A.  
 40mm FINE CONCRETE LAYING COURSE (SEE NOTE 1).  
 100mm DENSE ASPHALT CONCRETE BASE TO S.H.W. CLAUSE 906 (AC 32 DENSE BASE 70/100).  
 150mm TYPE 1 UNBOUND MIXTURE TO S.H.W. CLAUSE 803.

**TYPICAL CAITHNESS PAVING DETAIL (70mm SLAB)**  
 (SCALE 1:20)



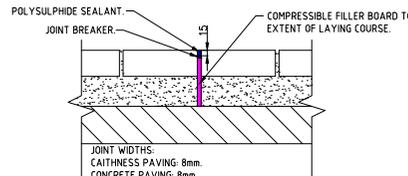
**CAITHNESS PAVING**  
 40mm CAITHNESS PAVING WITH COAT OF BONDING ADHESIVE AND 8mm JOINTS GUN POINTED. REFER TO ARCHITECTS SPECIFICATION Q25/310C.  
 40mm FINE CONCRETE LAYING COURSE (SEE NOTE 1).  
 100mm DENSE ASPHALT CONCRETE BASE TO S.H.W. CLAUSE 906 (AC 32 DENSE BASE 70/100).  
 150mm TYPE 1 UNBOUND MIXTURE TO S.H.W. CLAUSE 803.

**TYPICAL CAITHNESS PAVING DETAIL (40mm SLAB)**  
 (SCALE 1:20)



**NOTES:**  
 1. CONCRETE GRADE: C32/40 TO BS EN 19877-1.  
 2. THE SETTS SHALL BE BONDED AND EVERY SETT SHALL BE INDIVIDUALLY BEDDED TO GIVE A UNIFORM AND EVEN SURFACE LAID LEVELS OR FALL AS DIRECTED. THE MAXIMUM ALLOWABLE GAP BETWEEN ADJACENT SETTS IS 10-15mm.  
 THE JOINTS BETWEEN THE SETTS SHALL BE FILLED WITH BEDDING MORTAR. AFTER THE JOINTS ARE COMPLETELY SEALED ALL SURPLUS MATERIAL SHALL BE REMOVED.

**TYPICAL REINFORCED CONCRETE SLAB CONSTRUCTION DETAIL**  
 (SCALE 1:10)



**TYPICAL MOVEMENT JOINT DETAIL**  
 (SCALE 1:10)

Do not scale from this drawing.
<b>SAFETY HEALTH AND ENVIRONMENTAL INFORMATION</b>
IN ADDITION TO THE HAZARD/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING RISKS AND INFORMATION.
RISKS LISTED HERE ARE NOT EXHAUSTIVE. REFER TO DESIGN ASSESSMENT FORM NO.
CONSTRUCTION
DEMOLITION
FOR INFORMATION RELATING TO USE, CLEANING AND MAINTENANCE SEE THE HEALTH AND SAFETY FILE
IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.

**NOTES:**

1. **SPECIFICATION FOR LAYING AND JOINTING MORTAR:**

MIN COMPRESSIVE STRENGTH BS 4551-1 40N/mm<sup>2</sup>  
 MIN FLEXURAL STRENGTH BS 4551-1 6N/mm<sup>2</sup>  
 MIN ADHESIVE STRENGTH DIN 18555-6 1.2N/mm<sup>2</sup>  
 MODULUS OF ELASTICITY DIN 18555-4 (20000+/-4000)N/mm<sup>2</sup>  
 MINIMUM DENSITY BS 4551-1 2000kg/m<sup>3</sup>  
 MAXIMUM SHRINKAGE BS 812-120 0.15%

JOINT WIDTH: VARIES  
 FINE JOINTING CONCRETE TO BE USED

2. **RECIPE MIX FOR LAYING AND JOINTING MORTAR:**

2 PARTS CRUSHED ROCK (3mm TO DUST GRANITE)  
 1 PART BUILDING SAND  
 2 PARTS PROCEM OR TROJAN 27 CEMENT

TEST CUBES TO BE TAKEN FOR 7 DAY & 28 DAY.

3. **MOVEMENT JOINTS:**

CONTRACTOR SHOULD ALLOW FOR MOVEMENT/EXPANSION JOINTS AT 6m INTERVALS FOR NON TRAFFIC AREAS AND 4.5m FOR TRAFFIC AREAS. MOVEMENT JOINTS ARE REQUIRED AT FIXED POINTS OF RESTRAINT SUCH AS MANHOLES, WALLS AND UPSTANDS. REFER TO BS7533-101 (2021)

Rev.	Date	Description	Drawn	Checked	Approved



Project Title:  
**ABERDEEN CITY COUNCIL  
 CITY VISION**

Drawing Title:  
**HARD LANDSCAPING DETAILS**

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Scale: AS SHOWN	Status: For Information
Drawn: PALW	Checked: RMCD
Date: 14/10/21	Date: 14/10/21
Drawing No.: 143948/sk0001	Revision: -