Islington Wharf

Environmental Statement

December 2004

CONTENTS

		Page No
1.	Introduction	2
2.	The Site and its Surroundings	13
3.	The Development Proposals	15
4.	Consideration of Alternative Approaches	19
5.	Planning Policy Context	24
6.	Sustainability	33
7.	Phasing and Construction Methodology	38
8.	Archaeological & Historic Resource	52
9.	Historic Environment	61
10.	Visual Assessment	68
11.	Socio-Economic Assessment	97
12.	Noise and Vibration	125
13.	Ground Conditions	145
14.	Flood Risk Assessment	172
15.	Transport and Highways	183
16.	Ecology	195
17.	Air Quality	222
18.	TV and Radio Reception	240
19.	Summary of Mitigation Measures and Residual Impacts	248

1. Introduction

1.1 ISIS Waterside Regeneration Limited (hereafter referred to as ISIS) and Manchester City Council are proposing a major residential led, mixed use scheme at land off Old Mill Street and Great Ancoats Street, Manchester. The site, which comprises 1.5 hectares, is located to the north east of Manchester City Centre.

1.2 This Environmental Statement is submitted in support of three planning applications and an application for listed building consent, relating to the redevelopment and regeneration of the proposal site. The nature of these individual applications is set out in detail in Chapter 3.

1.3 The boundary of the site to which the applications relate, is indicated on the location plan contained within Appendix 1.3. Further detailed plans are also contained in the Supplementary Planning Information document, which is submitted to the Local Planning Authority alongside this Environmental Statement.

1.4 In summary, the proposals will involve the redevelopment and regeneration of the application site for a mixed-use waterfront scheme including residential, hotel (on one option only - Option II), retail and food and drink uses. Residential use will form the principal use within the site. The scheme will involve the comprehensive redevelopment and regeneration of the existing site including the introduction of new public spaces and public routes over three phases.

The Applicant: ISIS Waterside Regeneration Limited

1.5 ISIS is a waterside regeneration company that was launched at the Urban Summit in 2002. The purpose of the company is to assist in delivering the Government's vision of an urban renaissance, building on the natural strengths of our waterways.

1.6 ISIS Waterside Regeneration was formed by British Waterways in 2002 and is a public/private partnership between British Waterways, AMEC Developments Ltd and Morley Fund Management.

1.7 The company is committed to delivering and maintaining benefits to the neighbourhoods their development projects relate to. ISIS seek to work with its partners and other stakeholders in the area to build upon the special and characteristic qualities that distinguish a location and provide a community with identity. The result is a stimulating, innovative high quality sustainable community.

Track Record

1.8 ISIS currently have a portfolio which extends to approximately 57 hectares of land in the UK. ISIS are currently delivering projects in 8 cities within the UK including Glasgow, Nottingham, Leeds and Brentford. These development projects will deliver a range of residential facilities, employment opportunities and community services, to benefit the local communities within the location of the development site.

Background to Report

1.9 This report is an Environmental Statement (ES), which has been prepared in support of the three planning applications (one full planning application and two outline planning applications) as required under the Town and Country Planning legislation described below. The purpose of the Statement is to present the findings of an Environmental Impact Assessment (EIA) and to describe the significant environmental effects of the proposals. Where appropriate, mitigation measures are proposed to ameliorate the more significant potential effects.

1.10 The scope of the environmental issues considered in this document is also based on discussions with Manchester City Council and other consultees. A copy of the submitted Scoping Report is included in Appendix 1.1.

1.11 For the avoidance of doubt, this Environmental Statement deals with all these planning applications. Each application should be read in conjunction with this Environmental Statement.

EIA Process

Legislative Context

1.12 The Environmental Statement is prepared in accordance with the Town and Country Planning (Environmental Impact Assessment)(England and Wales) Regulations 1999 and Circular 2/99, which provide guidance on EIA procedure and on the preparation of Environmental Statements.

1.13 It is considered that the proposed development falls within category 10b of Schedule Two within the Town and Country Planning (Environmental Impact Assessment)(England and Wales) Regulations 1999. This refers to: 'urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas.' Such projects may require an EIA if 'the area of the development exceeds 0.5Ha'.

1.14 A formal "Screening Opinion" from Manchester City Council was requested on 25 March 2004 (see Appendix 1.4). The Council confirmed in writing on 5 April 2004 (see Appendix 1.4) that an EIA is required by virtue of the site's sensitive location, enclosing a Grade A SBI, the scale of the proposed development, and potential cumulative impact of the development when combined with further development in this area.

1.15 Since 5 April 2004, the proposed scheme has been amended in a number of ways including the mix of land uses, the amount of floorspace, the height of buildings and the density of development. Notwithstanding this, it is our client's view that the issues to be considered as part of the EIA remain unchanged. The proposals have not been re-screened, instead a detailed 'Scoping Report' has been submitted which updates the process accordingly.

1.16 Since the submission of the Scoping Report to Manchester City Council on 16 November 2004, there have been a small number of minor alterations to the detail of the scheme proposals. These alterations are not material and have been considered in full within this Environmental Statement. This Environmental Statement is submitted with the three applications for planning permission and listed building consent.

1.17 It has been agreed with the Local Planning Authority that the following matter should be considered as part of this Environmental Statement:

Figure 1.1 List of topics considered within the Environmental Statement

TOPIC	CONSULTANT
Land Use and Planning Policy	Drivers Jonas
Sustainable Development	Buro Happold/ ISIS
Alternative Options	Drivers Jonas/ Broadway Malyan
Phasing and Construction Methodology	Mace/ Broadway Malyan
Archaeology	CgMS
Historic Environment	Heritage Architecture
Visual Assessment	Broadway Malyan
Socio-economic	Quality Economic & Social Research
Noise and Vibration	Arup
Ground Conditions	Arup
Flood Risk Assessment	Arup
Traffic and Transport	Martin Stockley Associates
Ecology	PAA
Air Quality	Arup
Television and Radio Reception	Taylor Brothers

The Process

1.18 The two key stages of the EIA process, as identified in the "the Regulations", can be summarised as follows:

In the first stage the applicant undertakes an assessment so that environmental issues can be taken into account during the design of the project. This involves consultations, data collection and environmental studies to identify the effects and propose mitigation measures to prevent, reduce and offset them. This is reported in an Environmental Statement (ES) which is submitted in conjunction with the planning application.

The planning authority then undertakes the second main stage by critically evaluating the statement, seeking further information from the applicant if necessary, and taking into account additional consultations and public representations. This is to ensure that the planning authority has sufficient reliable information to understand the likely environmental effects and specify any mitigation measures before the planning application is determined.

1.19 The purpose of the Environmental Statement is to identify all significant environmental effects, which may result during the complete lifecycle of the development. This in turn provides the Local Planning Authority with the information it requires to determine the relevant applications.

1.20 The main activities in the EIA process can be summarised as follows:

- definition of the project to be assessed;
- description of the "baseline" environment (i.e. the conditions that are likely to prevail at the commencement of the project);
- definition of the scope of the assessment;
- consultation with interested parties;
- prediction of the likely effects of the project;
- evaluation of these effects in terms of their potential significance; and
- description of the nature and effectiveness of measures which could be adopted in order to mitigate significant adverse effects.

Description of Proposals

1.21 The proposals will involve the redevelopment and regeneration of a site for a mixed-use waterfront scheme including residential, hotel (on one option only – Option II), retail and food and drink. Residential use will form the principal use within the site. The scheme will involve the comprehensive redevelopment and regeneration of the existing site including the introduction of new public spaces and routes over three key phases of development.

1.22 The proposals comprise two scheme options (Options I and II). This ES addresses the effects of both options.

1.23 The development proposals comprise a full planning application, two outline planning applications (Option I and Option II) and an application for listed building consent as set out in Chapter 3.

1.24 The full planning application relates to Phase 1 and contains a full set of plans which this ES relates to. The outline planning application relates to Phases 2 and 3 which are illustrated in the Masterplans (Appendix 1.2). The Masterplans have been submitted for approval with the outline planning applications (plan ref: MAS-03-001 relates to Option I and plan ref: MAS-03-002 relates to Option II). It is intended that the outline planning permissions will be tied to these Masterplans by way of a condition within the planning permissions to ensure that this EIA is robust and based on measurable parameters.

1.25 The Masterplans are diagrams which illustrate the location, massing, car parking, floorspace and other key details.

Method Statement

1.26 The EIA has been commissioned by ISIS Waterside Regeneration and Manchester City Council whilst the project has been co-ordinated by Mace Limited. The planning applications and application for Listed Building Consent have been project managed by Drivers Jonas, with considerable input from a large number of specialist consultants.

1.27 This Chapter of the Environmental Statement provides a detailed breakdown of the chosen project methodology. The following key information is included:

- The consultant team, their individual responsibilities and how the EIA process, leading to preparation of the ES, has been co-ordinated;
- Details of technical studies undertaken;
- The approach to determining scale and significance of effects, and the basis upon which predictions were made (e.g. professional knowledge and judgement, initial studies, desktop exercises, preliminary survey work); and
- What guidelines, methods and techniques have been used in the process of determining significance of effects.

Consultant Team

1.28 The EIA studies have been co-ordinated by Drivers Jonas and Mace. The individual technical studies have been undertaken by the multi-disciplinary project team. The ES has therefore been produced in part by Drivers Jonas with contributions from the specialists and consultants who have been involved in the design and EIA of the proposals as set out below:

Figure 1.2: EIA and the Project Design Team Roles

Consultant / Company	Role
Broadway Malyan	Scheme Architects. Consideration of visual assessment and scheme alternatives.
Stephen Levrant (Heritage Architecture)	Historic Environment.
Arup	Noise and vibration, air quality, ground conditions, contamination and water resources (including flood risk assessment).
Martin Stockley Associates	Transportation Assessment and Highway Design.
Mace	Development Project Management and construction and phasing design.
Geoff Hamby (Quality Economic and Social Research)	Socio-economic Assessment (in collaboration with Drivers Jonas).
Buro Happold	Sustainable Development.
CgMS	Archaeology.
Penny Anderson Associates	Ecology.
Taylor Bros (Bolton) Limited	Television and Radio Assessment.
Drivers Jonas	EIA co-ordination, planning and policy context.

Approach to Technical Studies Undertaken

1.29 The EIA studies commenced at an early stage in the development proposals, when a scheme design had not yet been fully developed. The findings of these baseline environmental studies have played an important role in the design development. These studies defined the environmental sensitivities and constraints associated with the redevelopment of the site at the outset to avoid or minimise potential impacts by design.

1.30 Design Team Meetings, attended by key members of the project team, were held at regular intervals throughout the EIA process. These meetings provided a valuable forum for the exchange of information and ensured that the design team were fully aware of the environmental constraints and opportunities within the site.

1.31 The technical EIA studies have been undertaken in accordance with relevant guides and procedures. The majority of this guidance is specific to the various EIA key issues and is therefore referenced within the assessment Chapters. The majority of assessments involved consultations with statutory and non-statutory bodies, desk-based research, site inspections and surveys, impact prediction and input of mitigation to the design, where appropriate.

1.32 The content and conclusions of the ES are based on the fullest assessment that could be made, given the information available at the time of writing. The main objective of the ES is to present a clear, reasoned argument of the beneficial and adverse impacts of the proposal.

Consultations

1.33 The EIA involved a programme of consultations with a number of statutory and non-statutory organisations and interest groups in order to identify the views and concerns of interested/affected parties with respect to the likely environmental effects of the proposed development. Consultations have continued throughout the preparation of the EIA and in particular, regular meetings have taken place with Manchester City Council and New East Manchester in relation to Planning and Design Issues, Impact on the Historic Environment, Visual Assessment, Transportation, Ground Conditions and Noise and Air Quality.

1.34 In addition, consultations have been undertaken with specialist consultees. The findings of these consultations have informed the design and evolution of the development proposals. A full list of the consultees is set out below.

Figure 1.3: List of Consultees

Consultee	Contact
Manchester City Council - Planning Department	Sue Wills
Manchester City Council - Commercial Services	Ingrid Daly
Manchester City Council - Access Officer	Jason Irving and Lorraine Ward
Manchester City Council - Environmental Protection Group	Nick Folkes
English Heritage	Andrew Martindale
Greater Manchester Archaeological Unit	Norman Redhead
Greater Manchester Police - Architectural Liaison Officer	Steve Elsden
Greater Manchester Ecology Unit	Suzanne Waymont

British Waterways	Jason Leach and Mike Marshall
New East Manchester	Lyn Fenton
English Nature	Paul Green
Manchester City Council - Highways Department	Chris Barber
Manchester City Council - Landscape	Libby Campion
United Utilities - Electricity	Karen McFadden
United Utilities - Water	Karen McFadden

Assessment of Impacts

1.35 Each key EIA issue, as set out above, has been given a separate Chapter in the ES, and this Section sets out the way in which the assessment of impacts for each of the technical studies is presented within this document.

Introduction

1.36 Each of the technical Chapters begins with an introduction detailing the authorship of the study and the Chapter within the ES.

Assessment Methodology and Terms of Reference

1.37 This Section describes the method or approach employed in the assessment of impacts, the criteria by which the significance of impacts has been evaluated, the sources of information used and any technical difficulties encountered.

Baseline Conditions

1.38 This Section describes the baseline environmental conditions i.e. the current situation and anticipated changes over time in the absence of the proposed development. This is a critical part of the EIA process as it provides a measure against which potential environmental effects can be assessed.

Potential Impacts

1.39 This Section indicates the potential significant effects that the proposals may give rise to. These were identified through scoping discussions with Manchester City Council and other relevant consultees.

Results of Analysis - Assessment of Impacts

1.40 This section describes the impacts of the proposed development and assesses their likely significance.

1.41 The assessment of impact significance has been undertaken using appropriate national and international quality standards. Where no such standards exist, the judgements that underpin the attribution of significance are described. The assessment of impact significance is determined by its magnitude (i.e. how far the impact deviates from the established baseline conditions) and receptor sensitivity.

1.42 The following factors are also of relevance.

- Whether the impact is direct or indirect;
- Whether the impact is reversible or irreversible;
- Whether the duration of the impact is short, medium or long-term; and
- Whether the impact occurs in isolation or is cumulative or interactive.

Mitigation

1.43 One of the main aims of the EIA process is to develop mitigation measures to avoid, reduce or compensate for the significant adverse effects of a project. These measures can relate to site construction or the completed development. This Section of the ES Chapter describes the measures which would be implemented to avoid or ameliorate potential adverse impacts and enhance the potential beneficial impacts of the development.

1.44 In many cases, mitigation measures are inherent within the development proposals (either through design or operation) whereby potentially significant adverse impacts are avoided, although not all impacts can be avoided and there are some measures proposed to reduce or compensate for these. However, in considering the impacts of the proposed development, these have been assessed with the described mitigation measures in place.

Conclusion and Residual Impacts

1.45 At the conclusion of each Chapter the residual impacts, defined as those that remain following mitigation, are summarised for the construction phase (short-medium term) and completed (long-term) development. These are also summarised in Chapter 19.

Cumulative Impact

1.46 The issue of cumulative impact of the proposed development at Islington Wharf when combined with approved neighbouring development, particularly that within the New Islington area to the north of the subject site, has been considered in detail throughout this Environmental Statement.

1.47 The following Chapters consider their findings based on the cumulative position with approved development and the effects that development at Islington Wharf will have on this existing approved baseline position:

- Phasing and Construction Methodology;
- Visual Assessment;
- Noise and Vibration;
- Transport and Highways;
- Air Quality; and
- TV and Radio reception.

1.48 This Environmental Statement therefore addresses this key issue which was raised during the screening process.

Structure of the Environmental Statement

Environmental Statement

1.49 The remainder of this report is split into the following sections.

Chapter 2	Identifies the site location and provides a description.
Chapter 3	Outlines the nature of the proposals, which comprise three planning applications and an application for Listed Building Consent. This section also details the nature of the three phases of development.
Chapter 4	Provides a detailed description of the alternatives.
Chapter 5	Considers the proposals in relation to relevant planning policy.
Chapter 6	Assesses the sustainability of the proposed development.
Chapter 7	Presents a summary of the construction-phase mitigation necessary.
Chapter 8	Considers the potential effects on archaeology.
Chapter 9	Considers the historic environment.
Chapter 10	Examines the visual impacts of the scheme.
Chapter 11	Assessment of the socio-economic impacts.
Chapter 12	Examines the impact on noise and vibration.
Chapter 13	Describes baseline ground conditions and assesses potential impacts arising from the development.
Chapter 14	Describes baseline water environment and assesses potential impacts arising from the development in relation to floodrisk.
Chapter 15	Assesses the transport and highways effects of the scheme.
Chapter 16	Considers the potential effects on ecology.
Chapter 17	Considers the impacts upon air quality

Chapter 18	Assessment of impact on TV and Radio reception.
Chapter 19	Conclusion and summary of residual impacts.

Supporting Documents to Environmental Statement

1.50 A Non-Technical Summary of the Environmental Statement is issued as a separate document.

1.51 Technical Appendices have also been included with the report (see Volumes 1 and 2).

Contacts For Further Information

1.52 For further information, please contact :

Mark Underwood or Lara Wheatley
Drivers Jonas
26 York Street
Manchester
M1 4JB

Email: firstnamesurname@driversjonas.com

Tel: 0161 247 7373

2. The Site and its Surroundings

Site Location

2.1 The site is situated off Great Ancoats Street and Old Mill Street (see Appendix 1.3). The site is bounded by Old Mill Street, Great Ancoats Street, the Ashton Canal and Vesta Street.

2.2 The site is situated at the north-eastern edge of Manchester City Centre. Great Ancoats Street provides a frontage for the site along an important gateway on the main ring road around Manchester City Centre.

2.3 The Ashton Canal, designated as a Grade A Site of Biological Importance, is situated immediately to the east of the site and the Islington branch arm of the canal runs through the site.

Site Description

2.4 The site, comprises 1.5 hectares and is situated within New East Manchester, an area of substantial redevelopment and regeneration activity. The Ancoats area is currently undergoing a transformation and is the centre of significant redevelopment activity.

2.5 The application site is situated adjacent to the New Islington development site. This site has planning permission for a residential led mixed use development, which is being led by Urban Splash.

2.6 The site and surrounding area is commercial/industrial in nature. The majority of the site is vacant and derelict. Within the vicinity of the site is a listed Lock Keepers Cottage and two further listed canal locks.

2.7 The tow path bridge within the site is a listed bridge structure as is the lock adjacent to Blocks A and B. Other buildings within the site include a single storey former office building, which is a listed building, and a number of brick built buildings currently used for storage purposes by British Waterways.

Relationship to Manchester City Centre

2.8 The site is located off Great Ancoats Street, the inner ring road in Manchester which provides access directly into the city centre. Access to the city centre from the site is provided by a variety of routes but most likely will be Ducie Street.

2.9 Pedestrian access to the city centre can also be gained via the Ashton Canal tow path, which forms the eastern boundary of the application site. The development proposals incorporate works to the lock steps in the south eastern corner of the site, in order to improve access arrangements into the site.

2.10 The site is located adjacent to the Central Retail Park which is accessed off Great Ancoats Street. In addition there is a mix of commercial, retail and residential uses situated along Great Ancoats Street. Great Ancoats Street is part of the Primary route network and is an element of the very busy Manchester and Salford Inner Relief Road. As result Great Ancoats Street is heavily trafficked in this locality.

Regeneration Context

2.11 The application site is situated adjacent to the New Islington Millennium Community development site. The New Islington scheme has planning permission for a residential led mixed use development which is being driven by Urban Splash.

2.12 The scheme comprises 12.5 hectares of land and will include 1,400 homes, a primary school, health clinic, offices, leisure facilities, shops, restaurants, a waterway and public open space.

2.13 Urban Splash are progressing this scheme, supported by English Partnerships, New East Manchester and Manchester City Council.

2.14 The proposal site subject of the Environmental Statement lies to the south of part of the New Islington development site. This Environmental Statement has considered the cumulative impact of the Islington Wharf proposals and the adjacent New Islington development, upon the locality.

3. The Development Proposals

The Proposal

3.1 The proposals will involve the redevelopment and regeneration of a site for a mixed-use waterfront scheme including residential, hotel (Option II only), retail and food and drink. Residential use will form the principal use within the site. The scheme will involve the comprehensive redevelopment and regeneration of the existing site including the introduction of new public spaces and routes over three key phases of development.

3.2 The proposals comprise two scheme options (Options I and II). Details of these options and phases are set out below. This ES addresses the effects of both options in turn. In simple terms, Option II includes a hotel, Option I does not.

3.3 The development proposals comprise a full planning application, two outline planning applications (Option I and Option II) and an application for listed building consent.

3.4 The full planning application relates to Phase 1 and contains a full set of plans which this ES relates to. The outline planning application relates to Phases 2 and 3 which are illustrated in the Masterplans (Appendix 1.2, plan ref: MAS-03-001 relates to Option I and plan ref: MAS-03-002 relates to Option II). The Masterplans have been submitted form approval with the outline planning applications. It is intended that the outline planning permissions will be tied to these Masterplans by way of a condition within the planning permissions.

3.5 The Masterplans illustrate the location, massing, car parking floorspace and other key details, to ensure that the EIA can robustly assess the environmental effects of the proposals against agreed parameters.

3.6 The proposals comprise two scheme options (Options I and II). Details of these options and phases are set out below and also included in Appendix 1.2.

Option I

Phase 1

3.7 **Block A** - will comprise a maximum of 9 storeys with a mix of apartment sizes including 25x1 bed units, 44x2 bed units and 9x3 bed apartments. This equates to 78 apartments in total. This block will include one Class A3 unit at ground floor, which will comprise 82 m^2 gross floorspace. The Great Ancoats Street elevation will include three storey residential units. The gross floorspace of the building will be 6,558 m^2.

3.8 **Block B** - this building will extend to a maximum of 21 storeys at its highest point. This block will include one Class A3 bar/restaurant of 490 m^2 gross floorspace, located on the ground floor. The remaining floors will be occupied by a total of 122 residential apartments comprising a mix of 46x1 bed units, 59x2 bed units and 17x3 bed units. The gross floorspace of the building will be 9,281 m^2.

3.9 Car parking within Phase 1 will comprise 151 parking spaces.

Phase 2

3.10 **Block C** - this will comprise 49 apartments to include a mix of 16x1 bed units, 31x2 bed units and 2x3 bed units. The gross floorspace of the building will be 3,905 m^2. The building will extend to a maximum of 7 storeys in height.

3.11 **Block D** - this building will extend to a maximum of 11 storeys to include two retail units at ground floor. These units will form a Class A1 retail unit of 140 m^2 gross floorspace and a larger Class A1 retail unit of 1,293 m^2 gross floorspace. The remaining floors will be occupied by a total of 153 residential apartments comprising a mix of 54x1 bed units, 81x2 bed units and 18x3 bed units. The gross floorspace of the building will be 11,636 m^2.

3.12 Car parking within Phase 2 will comprise 151 residential parking spaces, 35 off road retail spaces and 9 spaces on Old Mill Street.

Phase 3

3.13 **Block E** - this building will extend to a maximum of 9 storeys to include a Class A1 retail unit at ground floor. This unit will have a gross floorspace of 343 m^2. The remaining floors will be occupied by a total of 139 residential apartments comprising a mix of 57x1 bed units, 75x2 bed units and 7x3 bed units. The gross floorspace of the building will be 10,491 m^2.

3.14 Car parking within Phase 3 will comprise 44 parking spaces.

Car Parking Arrangements

3.15 The car parking facilities within Option I will include; 302 residential spaces at podium level; 44 retail spaces comprising 35 spaces within the scheme, 9 spaces on Old Mill Street; and 44 spaces located under Block E.

Option II

Phase 1

3.16 **Block A** - is identical to the proposal under Option I and will therefore comprise a maximum of 9 storeys with a mix of apartment sizes including 25x1 bed units, 44x2 bed units and 9x3 bed apartments. This equates to 78 apartments in total. This block will include one Class A3 unit at ground floor, which will comprise 82 m^2 gross floorspace. The Great Ancoats Street Elevation will include three storey residential units. The gross floorspace of the building will be 6,558 m^2.

3.17 **Block B** - this building will extend to a maximum of 21 storeys at its highest point. This block will include one Class A3 unit of 490 m^2 gross floorspace, located on the ground floor. The remaining floors will be occupied by a total of 122 residential apartments comprising a mix of 46x1 bed units, 59x2 bed units and 17x3 bed units. The gross floorspace of the building will be 9,281 m^2.

3.18 Car parking within Phase 1 will comprise 151 parking spaces.

Phase 2

3.19 **Block C** - is identical to the proposal under Option I and will therefore comprise 49 apartments to include a mix of 16x1 bed units, 31x2 bed units and 2x3 bed apartments. The gross floorspace of the building will be 3,905 m^2. The building will comprise 7 storeys in height.

3.20 **Block D** - this building will extend to a maximum of 12 storeys to include two retail units at ground floor and a circa. 100 bed hotel which will occupy space throughout all floors. The retail units will form a Class A1 retail unit of 140 m^2 gross floorspace and a larger Class A1 retail unit of 1,241 m^2 gross floorspace.

3.21 The hotel entrance will be located on the ground floor and the hotel rooms between floors 3 and 11. The top floor will only accommodate 8 hotel rooms with the remainder of the level to be used for hotel amenity space such as a terrace.

3.22 The remaining space on floors 2-10 will be occupied by a total of 99 residential apartments comprising a mix of 36x1 bed units, 54x2 bed units and 9x3 bed units. The gross floorspace of the hotel will be 4,385 m^2 and the gross floorspace of the remaining uses within the building will be 7,864 m^2.

3.23 The total gross floorspace of this building will be 12,249 m^2.

3.24 Car parking within Phase 2 will comprise 151 residential parking spaces, 35 off road retail spaces and 9 spaces on Old Mill Street.

Phase 3

3.25 **Block E** - this building will comprise 11 storeys to include a Class A1 retail unit at ground floor. This unit will have a gross floorspace of 343 m^2. The remaining floors will be occupied by a total of 171 residential apartments comprising a mix of 61x1 bed units, 101x2 bed units and 9x3 bed units. The gross floorspace of the building will be 12,933 m^2.

3.26 Car parking within Phase 3 will comprise 44 parking spaces.

Car Parking Arrangements

3.27 The car parking facilities within Option II will include; 302 residential spaces at podium level; 44 retail spaces comprising 35 spaces within the scheme and 9 spaces on Old Mill Street; and 44 spaces located under Block E.

Application Format

3.28 The planning applications for the options and phases set out above will be submitted in three parts detailed below:

Full Planning Application — the full application will involve Phase 1 of the project.

Outline Planning Applications — two outline applications will be submitted with all matters reserved except siting and access. Both outline applications will involve Phases 2 and 3 of the proposal. The first outline application will relate to Option I (without hotel), Phases 2 and 3. The second outline application will relate to Option II (with hotel), Phases 2 and 3.

Listed Building Consent Application — one listed building consent application will be submitted, seeking consent for the following works:

- the demolition of an office block and wall which are attached to listed structures within the site. The removal of this structure is necessary to allow for the redevelopment of the site;
- alterations to the listed bridge which falls within the site. This work is required as part of the hard landscaping scheme and access arrangements; and
- alterations to the listed canal lock steps which fall within the site. This work is also required as part of the hard landscaping scheme and access arrangements.

Further Scheme Details

3.29 The Supplementary Planning Information document which is submitted to Manchester City Council with this ES, sets out the scheme details at length.

3.30 The Supplementary Planning Information document includes details of the materials to be used within the development, details of the Refuse Strategy, compliance with access requirements and delivery of public open space amongst other matters.

4. Consideration of Alternative Approaches

4.1 Paragraph 2, Part I of Schedule 4 of the Town & Country Planning (Environmental Impact Assessment) (England & Wales) Regulations 1999 requires applicants to provide an outline of the main alternative approaches to the development that have been considered and the reasons for their choice. These are broken down into the following categories:

- The 'Do Nothing' Scenario;
- Re-use/Refurbishment/Extension of existing buildings;
- Alternative design;
- Alternative location; and
- Alternative use.

4.2 The five alternative approaches have been selected on the basis that, environmentally, they differ from the fundamental components of the scheme - crucially, the proposed use, design and location.

4.3 This section has been prepared jointly by Broadway Malyan and Drivers Jonas.

4.4 Where appropriate, the commentary below will make reference to the two options that are subject to this EIA (Option I and Option II), and are identified previously in the description of proposals in Chapter 3.

Scenario A - Do nothing

4.5 The proposal site currently comprises two different components. At present, the majority of the site is unoccupied and surrounded with high hoardings, and some advertising hoardings. A smaller portion of land adjacent to the canal arm is in occupation by British Waterways as an operational works depot.

4.6 The unoccupied area of the site has become used for a number of unwelcome activities due to its relative isolation offered to it by the hoardings and lack of passive observation by adjacent receptors. These uses are signified by the amount of tipping and hypodermic needles that have been found on the site.

4.7 Whilst the accommodation offered adjacent to the Canal arm is of use, it does not provide high quality accommodation. This use as an operational works depot will also conflict with the emerging dominant residential land use in the area.

4.8 The current public realm on the North East side of the Ashton Canal affords a public route that is under-utilised, and lacks any passive observation. Currently the urban environment offers little incentive for the public to fully utilise this route from Great Ancoats Street and Vesta Street, in total more than 130m of towpath with no alternative egresses. The canal arm is totally excluded from public access, and cannot currently offer any safe escape at the mid point.

Summary

4.9 In accordance with the Regulations, the environmental effects of the "do nothing" scenario would be to perpetuate two uses that have a potential to conflict with the emerging dominant land use in the area (residential) and for positive impacts identified elsewhere in the Environmental Statement to not be realised.

Scenario B - Reuse/Refurbishment/Extension

Re-use of the existing building for mixed use purposes

4.10 The existing buildings are not of adequate size to support any new or regenerative use on the site. In environmental terms, the conversion of the existing building to residential or retail units is not a viable option since the buildings do not lend themselves to conversion in terms of both physical size and their location and access. They are also of little architectural or visual merit such that the building should be retained.

4.11 In urban design terms, the small, fragmented collection of low rise buildings have reached the end of their useful life in an area where higher density is encouraged and sustainable.

Scenario C - Alternative Design

4.12 A series of guiding principles were established early in the design process.

4.13 The methods utilised were drawings, models and 3-dimensional visualisation of how each alternative would fit within the site and its surroundings. This approach of studying numerous alternatives in order to arrive at an appropriate solution is typical of the way Broadway Malyan Architects work. Broadway Malyan Architects were particularly concerned about the relationship between the various elements of the masterplan proposals, its immediate context, the building's appearance medium range and long distance skyline views as a landmark along the canal.

4.14 As part of early proposals, a number of massing solutions were considered for the site:

- The surrounding areas are dominated by low and medium rise developments, but this approach on the site would not contain enough mass to allow the development to proceed, nor give any space back to the local community.
- Consideration was given to a number of individual buildings with a significant portion of the site given over to circulation and public access between buildings. This collection of buildings did not allow any clear definition of public and private space. It also gave little clarity between vehicular and pedestrian routes.
- The ground conditions on the site, coupled with proximity to the Ashton Canal and the canal arm make it unviable to provide any accommodation in a basement condition. Therefore any substantial quantity of parking for residential uses has to be located above ground. Due to the efficiency of the car park and ramp design, the most effective way of providing the car parking allocation is in a podium scenario. These buildings are also located away from the canal walls for structural reasons.

- The proposals have considered various locations for the landmark building, Block B. The 21-story building is located on the Ashton Canal, equidistant from Great Ancoats Street and the Canal Arm. This location naturally draws people along the canal arm and into the public spaces along the canal edge. It also serves as a landmark from the eastern approach into Manchester along the canal. These views of the landmark building are highlighted in the Visual Impact Assessment section of this EIA.

- The hotel mass in Option II has to be located on the corner of Great Ancoats Street and Old Mill Street for commercial reasons as part of the mass of block D. This corner provides the most prominent commercial position for this use. Any alternative would lead to its reduced visibility, and hence viability.

- The largest of the retail units is logically located on the corner of Great Ancoats Street and Old Mill Street. This offers maximum visibility, and an implied connection with the existing retail park to the north of the site.

- Alternatives to the frontage to Great Ancoats Street have been considered. For reasons cited above, the current proposals provide the clearest definition of public and private space, with the public access clearly focused along the water's edge, and the private courtyard space buffered from the environment on Great Ancoats Street by Block A.

4.15 In summary, the proposals form a well-connected mass of buildings that strengthen Great Ancoats Street, provide a landmark to the corner of Great Ancoats Street and Old Mill street, and provide a landmark to the centre of the development. The public realm is concentrated along the canal edge in well-observed areas. The high level private space is clearly defined, and houses the car-parking which cannot be located in any other area.

Scenario D - Alternative Location

4.16 The site is located on the eastern edge of Manchester City Centre, and forms the visual gateway into New Islington, a designated Millennium Community under the Government's Millennium Communities initiative.

4.17 The site commands a prominent position on the Ashton canal's waterfront. The site is located adjacent to Manchester's inner ring road, which is currently characterised by unattractive uses and over dominance of the car making for an unattractive and undefined gateway into Manchester City Centre. Critically, there is a need to refine this route as a key gateway/entry point into Manchester City Centre.

4.18 In simple terms, an alternative location would result in the loss of an exceptional opportunity to provide Manchester with an iconic, waterfront landmark. When considering such sites it is imperative to remember the building has been designed exclusively as a response to its waterfront and urban location and, furthermore, to define the route along the Ashton canal, both into the city centre, and away from the city into New Islington.

4.19 The aim of ISIS Waterside Regeneration is to provide innovatively designed, mixed use, and sustainable waterfront communities. This site at Islington Wharf therefore provides the water frontage conditions that are key to their regeneration vision. Each phase of the development will deliver a waterside development, with phase one adjoining the north side of the Ashton Canal, with phase two adjoining the west side of the canal arm, and phase 3, completing the eastern side of the canal arm.

4.20 In terms of alternative sites, the possibilities must therefore be capable of accommodating the whole scheme, and the waterside setting. If individual parts of the scheme were to be disaggregated from the whole it would undermine the principal mixed-use aims and objectives of the ISIS proposals and, therefore, fail. Whilst, in principal, the number of residential units proposed could be provided in a number of locations in and around the city, to do so would not achieve the significant environmental gain that flows from the proposals. The option of disaggregating the whole into these parts has therefore not been pursued.

4.21 ISIS, formed in partnership with British Waterways are committed to the development of quality waterside schemes. The proposed site is part owned by British Waterways, and therefore presents ideal opportunity for development by ISIS. To this end, alternative sites of this type are very limited.

Summary

4.22 The consideration of suitable alternative locations would result in the loss of an exceptional opportunity to provide the Ashton Canal corridor with an iconic, key landmark and Gateway into the New Islington Millennium Community.

Scenario E - Alternative Uses

4.23 ISIS is committed to developing mixed-use schemes. To this end, the site will contain Retail, Leisure and Residential accommodation, and in Option II, a hotel. A range of uses is therefore already incorporated in the proposals.

4.24 The entire area is undergoing transformation to a predominantly residential area, and so any alternative uses should not conflict with surrounding uses. Heavy industrial uses would therefore be inappropriate.

4.25 There is no overwhelming planning need for any other alternative uses.

Conclusion

4.26 The alternative options for the site have been assessed and the following summary can be made:

- To do nothing would result in a lost opportunity for Manchester to regenerate this area to the East of Manchester City centre; it would also result in a lost of a landmark gateway both to the city from the East, and into the new Millennium Community.
- The existing buildings do not lend themselves to conversion, nor for re-use as residential units.

- The surrounding areas are dominated by low to medium rise developments, but this approach on the site would not contain enough mass to allow the development to proceed, nor give any space back to the local community.
- An alternative location would remove the potential to deliver the development, on the Ashton Canal corridor, and would not address the improvements to the public realm adjacent to the existing canal.
- The mixed-use scheme delivers a sustainable balance in terms of land use, and conforms to the local plan. As an emerging residential area with a sub-urban character, other uses would not be acceptable in policy terms.

5. Planning Policy Context

Introduction

5.1 This Chapter, prepared by Drivers Jonas, considers the planning policy background in relation to National and Regional Planning Guidance for the North West (RPG13), the Manchester Unitary Development Plan adopted in July 1995 as subsequently amended and Supplementary Planning Guidance. It is these policies which the proposals at Islington Wharf should be considered against.

National Planning Policy

PPG1: General Policy and Principles (February 1997)

5.2 This guidance sets out three fundamental planks of the Government's approach to planning, namely the need for good design, sustainability and mixed-use development.

5.3 The guidance explains that new buildings and their curtilages have a significant effect on the character and quality of an area. It notes that good design can help promote sustainable development; improve the quality of the existing environment; attract business and investment; and reinforce civic pride and a sense of place.

PPS1: Creating Sustainable Communities - Consultation Draft (February 2004)

5.4 This PPS will replace PPG1 in due course. Draft PPS1 sets out the Government's vision for planning, and the key policies and principles which should underpin the planning system.

5.5 Draft PPS1 supports the reform programme and, in particular, the Government's objectives for planning culture change, by setting out the Government's vision for planning, and the key policies and principles which should underpin the planning system. These are built around three themes:

- Sustainable development - the purpose of the planning system;
- The spatial planning approach; and
- Community involvement in planning.

5.6 Sustainable development is a key focus. Specifically, planning policies should seek to achieve the following specific objectives for sustainable development and sustainable communities:

"Promoting urban and rural regeneration to improve the well being of communities, improve facilities, promote high quality and safe development and create new opportunities for the people living in those communities. Policies should promote mixed-use developments that create linkages between different uses and create more vibrant places.

Help to integrate the wide range of activities relating to development and regeneration. Plans should take full account of other relevant strategies and programmes and where possible be drawn up in co-ordination with them. They should work alongside urban and rural regeneration strategies, regional economic and housing strategies, community development and local transport plans. Planning authorities should consult closely with the bodies responsible for those strategies to ensure effective integration".

PPG3: Housing (March 2000)

5.7 This guidance strongly encourages the re-use of previously-developed vacant or under-utilised land and buildings and lends support to new housing within urban areas at high densities that are in close proximity to existing services and facilities and to public transport provision.

5.8 The proposals accord with this guidance. They will create in part high-density residential development on a previously developed site close to Manchester City Centre and in an existing urban area; the development proposals comprise a mix of retail, leisure and commercial uses thus generating employment and providing local services. Further more the development site is adjacent to existing services, facilities and employment opportunities and within close proximity to a range of modes of transport, as set out in Chapter 15.

PPG4: Industrial and Commercial Development and Small Firms (November 1992)

5.9 PPG4 identifies the need for economic development to be compatible with the Government's stated environmental objectives and requires the integration of economic and environmental objectives.

5.10 In locating industrial and commercial development, the guidance suggests that optimum use should be made of sites which are located within inner cities and other urban areas, in order to secure the most efficient use of land.

5.11 The guidance note considers that development control should not place unjustifiable obstacles in the way of development which is necessary to provide homes, investment and jobs. It also considers that planning decisions must reconcile development with environmental protection and other development plan policies.

PPG6: Town Centres and Retail (June 1996)

5.12 The emphasis of this guidance is to encourage new retail development to locate within existing centres based on a sequential approach to site selection. Additionally, the guidance seeks to promote centres in terms of quality and vitality through environmental improvements and good urban design.

5.13 The Government's main retail objectives are:

- *"to sustain and enhance the vitality and viability of town centres;*
- *to focus development, especially retail development, in locations where the proximity of businesses facilitates competition from which all consumers are able to benefit and maximises the opportunity to use means of transport other than the car;*
- *to maintain an efficient, competitive and innovative retail sector; and*

- *to ensure the availability of a wide range of shops, employment, services and facilities to which people have easy access by a choice of means of transport."*

PPS6: Planning for Town Centres - Consultation Draft (December 2003)

5.14 Draft PPS6 has been published for consultation. Being a draft statement of Government planning guidance it attracts some weight. Draft PPS6 is generally consistent with the aims and principles set down in PPG6, there are no significant changes in approach that affect this particular proposal.

PPG13: Transport (March 2001)

5.15 Land use planning has a key role to play in the delivery of the Government's ten-year transport strategy. The purpose of PPG13 is to integrate planning and transport at the national, regional strategic and local level.

5.16 The objectives of this guidance note are to:

- promote more sustainable transport choices for both people and for moving freight;
- promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and
- reducing the need to travel, especially by car.

5.17 See Chapter 15 on Transport and Highways.

PPG15: Planning and the Historic Environment (September 1994)

5.18 PPG15 sets out the Government's guidance on Planning and the Historic Environment. The proposals are considered in relation to this guidance in the Historic Environment and Visual Impact Assessment Chapters (Chapters 9 and 10).

PPG16: Archaeology (November 1990)

5.19 PPG16 sets out the Government's policy on archaeological remains on land, and how they should be preserved or recorded both in an urban setting and in the countryside. It gives advice on the handling of archaeological remains and discoveries under the development plan and control systems, including the weight to be given to them in planning decisions and the use of planning conditions.

5.20 The guidance sets out that developers and Local Authorities should take into account archaeological considerations and deal with them from the beginning of the development control process.

5.21 See Chapter 8 on Archaeology.

PPG23: Planning and Pollution Control (February 1997) and PPS23: Planning and Pollution Control (2004)

5.22 PPG23 has now been replaced by PPS23. Many of the same principles apply and have been taken forward into PPS23 or included within other PPGs/PPSs.

5.23 The planning and pollution guidance note gives guidance on the relevance of pollution controls to the exercise of planning functions. It fulfils a commitment given in the Environmental White Paper - 'This Common Inheritance'. It gives advice on the relationship between authorities' planning responsibilities and the separate statutory responsibilities exercised by local authorities and other pollution control bodies.

5.24 As with PPG23 the newly published PPS23 sets out guidance on air quality, prevention of nuisance and impact on amenity.

5.25 See Chapters 13 and 17 on Ground Conditions and Air Quality.

PPG24: Planning and Noise (September 1994)

5.26 Paragraph 2 of PPG24 sets the general principle that wherever practicable noise-sensitive developments should be separated from major sources of noise, and new development involving noisy activities should be sited away from noise sensitive uses.

5.27 The PPG comments in Paragraph 10 that:

"Much of the development which is necessary for the creation of jobs and the construction and improvement of essential infrastructure will generate noise. The planning system should not place unjustifiable obstacles in the way of such development. Nevertheless, local planning authorities must ensure that development does not cause an unacceptable degree of disturbance. They should also bear in mind that a subsequent intensification or change of use may result in greater intrusion and they may wish to consider the use of appropriate conditions."

5.28 Paragraph 11 of PPG24 points out that noise characteristics can vary substantially according to their source and the type of activity involved.

5.29 See Chapter 12 on Noise and Vibration.

PPG 25: Development and Flood Risk (July 2001)

5.30 The guidance looks at how flood risk should be considered at all stages of the planning and development process. It details the importance of the management and reduction of flood risk in planning, acting on a precautionary basis and taking account of climate change.

5.31 The guidance indicates that susceptibility of land to flooding is a material planning consideration, suggesting that the Environment Agency has the lead role in providing advice on flood issues, and that developers should fund flood defences, where appropriate.

5.32 Flood risk matters are dealt with in Chapter 14 within the ES.

Regional Planning Guidance for the North West (RPG13)

5.33 Revised Regional Planning Guidance for the North West (RPG13) was adopted in March 2003. This document mirrors Government policy on sustainability with a strong emphasis toward urban regeneration and the use of previously-developed land.

5.34 RPG13 reiterates the primacy of the existing urban fabric to achieve a sustainable regional strategy. The need to secure an urban renaissance, that is, developing areas into places where people choose to live, work and relax, is identified as a key objective of the Regional Planning Guidance.

5.35 The following policies from the RPG are of particular relevance to the development:

SD1 The North West Metropolitan Area - Regional Poles and Surrounding Areas

5.36 Chapter 3 of the guidance sets out the Spatial Development Framework for the Region. This identifies the city centres of Liverpool and Manchester/Salford as the two major Regional Poles. The introductory section of this Chapter notes that:

"Both Regional Poles display the style and functions of regional capitals, with Manchester/Salford displaying the greater range of such functions and the greater economic strength at the moment. Manchester City Centre is becoming an economic driver within the Region. Both will need to sustain and develop their general attractiveness as places to live and work still further in order to perform their role as Regional Poles, to act as powerful catalysts for further regeneration of the nearby inner-city areas, to assist the urban renaissance of the North West Metropolitan Area, and to secure the prosperity of the Region."

5.37 This attempt to establish a firm focus on concentrating growth and change in the Region's two Regional Poles is encapsulated in Policy SD1, which states that:

"A significant proportion of development and urban renaissance resources of the Region should be focused on the North West Metropolitan Area, especially the Regional Poles and surrounding urban areas.

Within the North West Metropolitan Area, first priority will therefore be given to development and resources which will enhance significantly the economic strength, complementarity of roles, overall quality of life, environmental enhancement, and social regeneration within:

- *the city centre of Liverpool and its surrounding inner area; and*
- *the city centre area of Manchester/Salford and its surrounding inner area;*
- *and which will enhance the major, strategic infrastructure which supports them.*

It will also be necessary, in order to keep pace with international standards, to conserve the distinctive architectural heritage of the two Regional Poles, to add modern developments of high design quality, to improve the design and management of the public realm and to add greenery."

5.38 The supporting text to this Policy notes that the city centre of Manchester/Salford (in addition to Liverpool), is considered to be internationally recognised as a:

"large centre which is important for shopping, administration, financial services, businesses, heritage, sport, music, leisure and cultural life. The lifestyle offered in these two Regional Poles should be high and of international standard, and will need to be continually improved to that end. The economic success and further sustainable development of these two Regional Poles, and the image they project, will be vital ... to the North West Region as a whole."

UR1 - Urban Renaissance

5.39 This Policy identifies the sustainable regeneration of the Region's urban areas as being a clear priority. The guidance states that:

"the re-use of derelict land and buildings, the balanced distribution of good quality dwellings including affordable housing, access to employment opportunities, community facilities, and open space will improve the appeal of urban areas, contribute to their regeneration and safeguard their future."

EQ1 - Tackling Derelict Land and Contamination Issues

5.40 In relation to Policy UR1, this policy also identifies the importance of re-using derelict land and buildings. The guidance states that:

"priority should be given to those sites which present the best opportunities to support urban renaissance and reduce sources of pollution and environmental impact in the North West in line with the Core Development Principles and in a manner that will support the Spatial Development Framework."

Manchester UDP

5.41 The Manchester UDP was adopted in July 1995 with a plan period up to 2005. The Council have progressed some alterations to the UDP since that time, however, discussions with the policy section of the City Council has revealed that no alterations have been made that are relevant to the site of the proposed development.

5.42 The UDP is split into two broad sections. Part I provides general strategic policy guidance and Part II contains area specific guidance.

Part I Policies

5.43 Part I of the adopted UDP contains general policies that are relevant to the proposals. These provide strong support for the proposals:

Figure 5.1: Assessment of the Proposals with Manchester UDP Part I Policies

Policy ref:	Description
Objectives I and II	To improve the city as a place to live, work and visit and to revitalise the local economy in the following ways: ➢ Protecting and enhancing Manchester's architectural and historic heritage; ➢ Improving the housing stock and housing environment; ➢ Encourage the redevelopment of the City's older industrial and warehousing areas as their economic functions change; ➢ Building upon and reinforcing the economic and cultural role of the Regional Centre, and; ➢ Encouraging the redevelopment of the city's older commercial areas as their economic functions change.
Employment	
I1	Encourages maximising opportunities for the regeneration of new employment, priority will be given to promoting economic development in the northern, eastern and central parts of the city, and the development of vacant and derelict land and buildings. The major opportunities for employment creation include the Regional Centre.
I1.4	This Policy states that the Council will continue to encourage further development in the Regional Centre for those activities that will benefit from a regional centre's location.
I2	This Policy seeks to ensure that new development is fully accessible by all forms of transport and, in particular, is adequately served by the public transport network.
E1	This Policy goes on to state that all major new development will be required to be located where it can be easily served by public transport.
Heritage and the Environment	
E2.2	This Policy relates to Sites of Biological Importance. The aim of this policy is to protect SSSIs and SBIs, which are important natural sites and are part of the city's heritage. Within the site area there is a Grade A site, the Ashton Canal.
E2.7	This Policy advises that the protection of the city's architectural and historic heritage is vital to the retention of the city's character. This is an important element in promoting tourism and further economic investment in the city and ensuring that the city is an attractive place in which to live.

E3.3	This Policy relates to the Council's aim to improve the appearance of the City's major radial and orbital road routes.
E3.4	This Policy aims to create a network of safe and attractive recreational open spaces by linking river valleys, canals and other appropriate areas.
E3.6	This Policy encourages environmental improvements in the city centre, including bringing disused buildings of architectural and/or historic importance back into use.
Re-Use of Derelict Land	
E3.1	This Policy states that the reclamation of derelict land will be encouraged with a view to its early re-use for economic uses.
Urban Renewal	
R1	This policy aims to secure the renewal of areas where the problems of dereliction and unacceptable housing conditions are most severe. It aims to provide new employment opportunities, new affordable housing and a substantially improved environment.
Housing	
H1.2	This policy states the Council's aim to ensure that there is a range of housing types and tenures available for people requiring accommodation in the City Centre.

Part II Policies

5.44 Part II of the adopted UDP contains area specific guidance.

5.45 The plan has the following main objectives:

- To regenerate residential areas and broaden the range of housing types and tenures;
- To promote mixed use retail and leisure development;
- To revitalise the local economy by bringing back into use vacant and derelict land and buildings;
- Achieve high standards of building design and urban design; and
- The holistic regeneration of the area leading to improvements in the quality of life and environment of residents, workers and visitors to East Manchester.

UDP Review

5.46 There are no policies contained within the review of the UDP that have relevance to the site area.

Ancoats Urban Village Supplementary Planning Guidance (SPG)

5.47 Although the application site does not fall within the area covered by the SPG it is located close to the site. The impact of the development proposals upon the provisions within the SPG has been considered. The SPG sets out the following objectives:

- Create a living and working quarter, immediately adjacent to the City Centre of Manchester.

With reference to:

- Providing an attractive place to live, work and visit so that Ancoats becomes a sustainable extension of the city;
- Safeguarding and protecting the valuable built heritage of Ancoats, to ensure it plays its full part in the regeneration of the area;
- Reflecting locally, the principles of the Guide to Development in Manchester; and,
- Developing a sustainable, diverse, and integrated residential and business community.

SPG for East Manchester

5.48 The SPG was adopted in July 2001 and was developed to build upon the provisions of the UDP to aid in the regeneration of East Manchester. It contains both general guidance for the East Manchester area and site-specific guidance for the individual areas of East Manchester.

5.49 The guidance states proposals will need to:

(i) Provide mixed-use high-density development which could include residential, leisure, office, workspace and some limited local shopping provision.

(ii) Provide high quality design and appearance for all new buildings, refurbishment schemes and street surfaces and other public realm areas.

(iii) Address important listed buildings and produce new high quality building designs which are sympathetic to their architectural setting, and which will take full advantage of all frontages, particularly along the Ashton Canal and at Great Ancoats Street, ensuring that all buildings are of an appropriate scale and massing, and include landmark features, where appropriate.

(iv) Recognise the importance of existing connections between the city centre and Eastlands (particularly Store Street, Old Mill Street, Great Ancoats Street, and Pollard Street).

(v) Consider enhancement of the canal side environment through a range of environmental improvements and appropriate developments which would improve access and safety.

6. Sustainability

Introduction

6.1 Sustainable Development has been defined in many ways. The UK Government's approach is to ensure a better quality of life for everyone, now and for future generations. The widely accepted and most commonly cited definition of sustainable development was coined in the Bruntland Report - 'Our Common Future' in 1987:

"development which meets the needs of the present without compromising the ability of future generations to meet their own needs'."

6.2 The principles of sustainable development have become enshrined in national and regional policy through a number of key documents, including:

- UK Government's Strategy for Sustainable Development: A Better Quality of Life (DETR, 1999)
- Planning Policy Statement 1 (PPS1) : Creating Sustainable Communities

6.3 The design of the development has been developed in accordance with a number of environmental and sustainability drivers, including:

- National, regional and local Government Policies and development plans;
- The client's Corporate policies; and
- Design guidance and best practice.

National Policy

6.4 The UK Government's Strategy for Sustainable Development: A Better Quality of Life (DETR, 1999) encapsulates national commitments arising from the Earth Summits, international conventions such as the Kyoto Protocol 1997 (which commits the Government to cutting carbon dioxide emissions in 2010 by 20%) and the principles of the 1992 Rio Declaration on Environment and Development.

6.5 In 1992, nearly 180 countries convened at the Rio Earth Summit to discuss the need for sustainable development and agree a way forward. Sustainability as a concept, has existed in many guises throughout history, but what this convention achieved was to place the need for sustainable development as a central theme in the policy arena. One of the key achievements of the Earth Summit was to agree Agenda 21, which required central and local government to prepare sustainability strategies for the 21st Century.

6.6 Ten years later, the UK government has reaffirmed a range of commitments and targets for action at the 2002 World Summit on Sustainable Development in Johannesburg (Sustainable Development and the 2002 World Summit - House of Commons Research Paper 02/55 October 2002).

6.7 The four main objectives of the UK Sustainability Strategy are:

- Social progress which recognises the needs of everyone;
- Maintenance of high and stable levels of economic growth and employment;
- Effective protection of the environment; and
- Prudent use of natural resources.

6.8 The principles of sustainable development have become enshrined in national policy, particularly through Planning Policy Guidance note 1: General Policy and Principles (1997) which includes the following aims:

- Providing for commercial and industrial development and other building needs while respecting environmental objectives;
- Using already developed areas in the most efficient way, while making them more attractive places in which to live and work;
- Conserving both the cultural heritage and natural resources, including water, air quality, wildlife etc.;
- Shaping new development patterns in a way which minimises the need to travel;
- Concentrating development for uses which generate a large number of trips in locations well served by public transport, especially town centres, rather than out-of-town locations; and
- Concentrating development of land in built-up areas, particularly on Brownfield sites, before the development of Greenfield sites.

6.9 These policies serve as drivers towards sustainability to which developers can respond. Other Planning Policy Guidance notes and Planning Policy Statements which are particularly relevant to sustainability include:

- PPS1 - Creating Sustainable Communities (ODPM, Consultation Paper May 2004).
- PPG3 - Housing (DETR, 2000).
- PPG10 - Planning and Waste Management (DETR, 1999).
- PPG13 - Transport (DETR, 2001).
- PPG15 - Planning and the Historic Environment (DETR, 1994).
- PPG16 - Archaeology and Planning (DETR, 1990).
- PPG22 - Renewable Energy (DETR, 1993).
- PPG23 - Planning and Pollution Control (DETR, 1994).

Regional Policy

6.10 In 2003 the North West Regional Assembly issued their draft report 'Taking Forward Action for Sustainability - An Action Plan for the North West 2003-2006'.

6.11 The Action for Sustainability framework focuses on four key areas which it believes need to be addressed in order to achieve a more sustainable region:

- Social progress which recognises the needs of everyone;
- Effective protection of the environment;
- Prudent use of natural resources; and
- Maintenance of high and stable levels of economic growth and employment.

6.12 The North West Regional Assembly has also developed an integrated appraisal toolkit for developments in the North West. (An integrated Appraisal Toolkit for the North West 2003). The areas assessed using this appraisal toolkit have been considered in the development and have been reviewed in the EcoHomes and ISIS Sustainability Charter Assessments.

Local Policy - Manchester City Council

6.13 At a local level, Manchester City Council has various drivers for sustainability, including planning policies embodied in the following:

- The Unitary Development Plan for the City of Manchester (adopted 1995).
- The Unitary Development Plan for the City of Manchester - East Manchester: Alterations to Part 1 (Adopted November 2003).
- The Unitary Development Plan for the City of Manchester - East Manchester: Alterations to Part 2 (Adopted November 2003).
- The Manchester Community Strategy 2002-2012 (April 2002).
- Supplementary Planning Guidance - Ancoats.

Guidance Documents

6.14 The design of the development has been informed by Good Practice Guidance, and precedents response to sustainability 'Green Initiatives', detailed below.

Good Practice in the Selection of Construction Materials (BCO 2002)

6.15 The British Council for Offices (BCO) and the British Property Federation have published this good practice report on the selection of materials in a bid to overcome the arbitrary nature of excluded materials lists. The report is designed to encourage a change in emphasis from the blanket exclusion of building materials considered deleterious, to one of ensuring good practice in their selection.

'Urban Design in the Planning System: Towards Better Practice.' CABE (Commission for Architecture & the Built Environment), 2000.

6.16 This publication aims to support and help to implement the Government's commitment to good design, as set out in PPG1 General Policies and Principles, and includes expanded guidance on urban design objectives, including:

- *Quality of the public realm:* Promoting public spaces and routes that are attractive, safe, uncluttered and work well for all in society.
- *Ease of movement:* Promote accessibility and local permeability.

6.17 Sustainability at Islington Wharf has been addressed in response to National, Regional and Local planning requirements and in direct response to the developer ISIS's requirements to demonstrate a commitment to Sustainability.

6.18 In addressing policies and ISIS's requirements, the development has reviewed the environmental, social and economic aspects of sustainability. ISIS have established their own Sustainability Charter which is a key requirement of the Brief for this development.

6.19 There is a commitment to undertake an environmental assessment of the design for the site using the Building Research Establishments' EcoHomes Assessment tool. Further, there is an aspiration that the overall rating achieved is "very good".

6.20 Key sustainability issues that are considered in the development of the scheme include:

- Energy consumption has been targeted through careful design of the building envelope to minimise heat losses and solar gains, and energy efficient lighting to key areas and general circulation spaces. Further, temperature controls are provided to individual rooms to give a level of controllability which allows the user to heat only required areas. This additionally reduces the CO_2 emissions associated with fossil fuel-derived energy.
- Water efficient sanitaryware will be installed to each dwelling to reduce water consumption. The feasibility of utilising rainwater for irrigation of soft landscaped areas will be further investigated.
- Careful consideration has been given to the selection of materials used within the dwellings.
- User comfort has also been addressed, through the careful orientation of buildings to allow habitable rooms to be adequately lit with natural light wherever possible. Noise and local environment issues have similarly been addressed through the provision of openable windows and a high quality acoustic performance of the building envelope.

- Consideration has been given to the neighbourhood into which the development will fit and the proximity and availability of appropriate facilities for the occupants have been identified where they already exist, or will be provided either within the application site, or adjacent developments. The local context and economy has also been considered and the design demonstrates a sympathetic solution to assist in regenerating the area, though the provision of a mix of sizes of private housing in an area dominated by social housing. The provision of communal gardens for the occupants and the public access improvements to the waterway will foster social interaction and go some way towards ensuring a vibrant and balanced community is created.

- Transport and traffic studies have been undertaken and serve to demonstrate the excellent locational aspects of the development. The close proximity of bus, tram and rail links in conjunction with the improved pedestrian and cyclist access to the main retail and commercial areas of the city ensure that employment opportunities exist at a local level, thus reducing the dependency in private car usage.

- Further, the opportunity for local management companies to be established to manage individual buildings exists and is undergoing further investigation. The provision of a bar, restaurant and hotel (on option II only) will provide further employment opportunities, whilst training and local labour initiatives through the construction phase are being discussed with Manchester City Council.

- An Ecologist has been appointed and a baseline assessment of the existing ecology of the application site undertaken. As a result of assessing the impacts on the Ecology and Biodiversity of the site, mitigation measures are proposed including the provision of bat roosts and the provision of wildlife habitats within the landscaping strategy.

- Similarly, Air Quality, Archaeology, Historic Building, Noise and Vibration, Socio-Economic, Landscape and Visual Impact Assessment, Contamination, Flood Risk and Traffic Impact Assessments have served to direct the design towards the creation of a sustainable development.

7. Phasing and Construction Methodology

Introduction

7.1 This Chapter considers Options, I and II of the proposal as set out in Chapter 3, it has been prepared by Mace to provide a summary of the potential impacts and the mitigation measures to be implemented during the construction phase in line with the principals of Best Practice Means (BPM).

7.2 Appendix 7.1 contains information and plans supplementary to this Chapter.

7.3 The Chapter further represents the Phasing and Construction Methodology for the proposed development at Islington Wharf within the following areas:

- Local Residents, Local Businesses and Members of the Public;
- Residents of the Scheme (during construction of subsequent phases);
- British Waterways, Canal Traffic & Users;
- Flora & Fauna;
- Water Resources; and
- Opportunities.

7.4 Consultations for this Chapter have been held with:

- British Waterways;
- New East Manchester;
- MCC Environmental Health as outlined in the Acoustics Report; and
- MCC Ecology as outlined in the Ecology Report.

7.5 Drawing heavily upon other technical Chapters; namely Archaeological and Historic Resource (8), Noise and Vibration (12), , Ground Conditions (13), Flooding (14), Transport (15), Ecology (16) and Air Quality (17) and. There are also a number of Appendices that are referred to separately.

7.6 ISIS will start discussions with a number of potential Contractors following submission of the Planning Application. It is important to state that the selection process has not yet commenced and the detailed implementation of each phase will developed by the preferred Contractors once selected for each phase.

7.7 It should be recognised that the requirement for mitigation as set out in the various Chapters of this Environmental Statement will be addressed during the risk assessment carried out with the project team and potential contractor.

Methodology and Terms of Reference

7.8 The potential environmental impacts that could arise during demolition and construction of a project of this type have been assessed with the assistance of the project team.

7.9 The scheme has been assessed based upon the proposed phasing and strategic programme detailed in the outline Site Logistics Plan contained in Appendix 7.1.

7.10 At this stage, it is difficult to make any detailed assessment of the likely traffic flows during construction, but this has been considered in detail within Chapters 12, 15 and 17 of the ES, dealing with noise, highways and air quality. The Contactor once appointed will develop a Project Transport Strategy, which will encourage the use of public transport, encourage car sharing and to employ local people were possible to reduce the traffic impact. This will be achieved through a Travel Plan, secured as part of the planning consent.

7.11 An Outline Site Logistics Plan has been developed (see Appendix 7.1) which ensures minimum disruption to vehicular and pedestrian movement and an assessment has been made of measures to be instigated by the contractor during the construction period to control the impact of noise, dust and vibration. This will be developed by the Contractors employed to build the Works. The Site Logistics Plan should be agreed as part of any planning conditions to the proposals.

7.12 The proposed detailed method and sequence of working and details of mitigation measures referred to below may be subject to refinement after discussions with relevant bodies and the Contractor.

Baseline Conditions

7.13 Baseline conditions for this site are set out in other technical Chapters of this Statement.

Potential Impacts

Sensitive Receptors

7.14 A number of sensitive receptors have been identified in and around the site that potentially will be affected by the construction works, these include:

- Local businesses in the Ancoats area.
- Members of the public.
- Residents of the scheme (during construction of subsequent phases).
- Canal traffic & users (including towpath).
- Flora and fauna occupying the site and adjacent areas.
- Water resources including the canal.

7.15 The potential impacts are summarised below:

Local residents, local businesses and members of the public

7.16 The main impact will be as a result of the traffic flows resulting from the development of the site. This will be in two phases with the initial impact due to construction traffic, followed by the added residential traffic associated with the development once each phase is constructed.

7.17 The impact of Construction Works would impact on both noise levels and air quality in the surrounding areas. These issues are covered separately within the ES at Chapters 12&17.

7.18 Construction works could also lead to:

- An increase in the amount of loose soil and clay being dispersed onto roads and other hard surfaces in the area in addition to construction materials such as sand, cement and hardcore.
- Any construction detritus not specifically cleared could eventually be washed away into the local sewers or groundwater.
- There is a risk that fuels and oils used during the construction process could spill or leak and enter into adjacent canal, the ground water or sewerage systems.

7.19 A potential impact to local residents, local businesses and members of the public may also exist in construction air quality emission sources:

- Construction Vehicle Movement: Vehicles moving in and around the site emitting exhaust particulate and re-suspending loose material on the road;
- Material Transfer: Spillage from transferring material around the site, wind picking up dust from material stock piles, particulate lifted from open container vehicles by the wind generated from the vehicle movement.
- Passing Vehicles: Material tracked out on the wheels of site traffic and re-suspended by passing traffic.

7.20 Other potential impacts include noise and vibration, due to:

- Demolition of existing buildings and construction (including piling) of new buildings; and the effects of Construction traffic. Potential receptors of these works are neighbouring residential properties and commercial properties as well as the residents whom move into the scheme as phases are completed.

7.21 All of these various potential impacts are addressed in Chapters 12, 13 and 17 dealing with noise, contamination and air quality.

7.22 During construction of deep foundations, contaminants within the near surface soils could be mobilised deeper into the underlying Aquifer, details on impacts can be found in the Chapter dealing with contamination.

7.23 Interference to television and radio signals in terms of 'shadowing' or 'reflection' may also be caused by the construction plant. This is further considered in Chapter 18.

Residents of the scheme (during construction of subsequent phases)

7.24 The overall site is divided into 3 areas required for sequential development. Phases 1 and 2 abut each other by sub-division of the podium car park at lower and upper levels. Phase 3 is physically separated from the other phases by the Ashton Canal arm. It is envisaged construction will take place over the next 6 or 7 years.

7.25 Phase 1 will be occupied when Phase 2 is constructed. Similarly Phases 1 and 2 will be occupied when Phase 3 is implemented. The construction of Phase 2 and 3 will therefore impact on the residents of previous phases and possibly residents of surrounding developments e.g. New Islington if these are developed at this stage.

7.26 Impacts in terms of noise, contamination and air quality can be found in Chapters 12, 13 and 17.

British Waterways, Canal Traffic & Users

7.27 British Waterways (BW) currently occupies the site and uses the canal arm. Following discussion with BW it is anticipated they will vacate the site prior to commencement of construction of Phase 1.

7.28 It is envisaged there may be temporary disruption to the canal and the towpath during certain elements of the Works including temporary closure and drain down and repair of the canal arm. Arrangements for this will be agreed with British Waterways once the timing and scope of these are fully defined. However, Contractors will be contractually obliged to comply with British Waterway's Code of Practice.

Flora & Fauna

7.29 It is envisaged that the canal arm would be drained down during construction of Phase 2 to allow refurbishment of the walls and that the natural habitats of various fauna may be affected through the construction works. This is further discussed in the Ecology Chapter of this Environmental Statement (Chapter 16).

Water Resources

7.30 The canal arm is adjacent to Old Mill Street, during construction there is some potential for runoff / contaminants to enter the Canal. This is further addressed in Chapters dealing with contamination , flooding and ecology (Chapters 13, 14 and 16).

Archaeology

7.31 There is a potential for damage to archaeological remains during the demolition and groundwork phases of construction, in particular the foundations of already demolished buildings, within the main site and abutting the canal. This is further discussed in the Archaeology Chapter of the Environmental Statement (Chapter 8).

Construction Sustainability

7.32 During construction phases each contractor will be contractually obliged to include the provision of sustainable materials and the removal of building materials from site in a safe and environmentally friendly manner, in line with a Waste Minimisation Strategy and the Sustainability Management Plan.

Opportunities

7.33 The scheme may introduce a major construction work force into the area.

Mitigation Measures

Construction Vehicle Movements and Traffic Management

7.34 Impacts associated with traffic and transport are considered in detail within Chapter 15.

7.35 A Project Transport Strategy will be prepared and agreed with Manchester City Council and will be subject to a planning condition. This will be based on a site-specific risk assessment, which will be carried out by the Contractor to determine the health, safety and environmental issues associated with transportation in and around site. Suitable safe access and egress needs to be provided and maintained to and from the main arterial routes. Vehicle and pedestrian segregation is a key requirement of the strategy and will be established, clearly identified and maintained in a safe condition, as well as being a key element with regard to Health & Safety.

7.36 The assessment of vehicle movements on site will commence with the development of the Construction Methodology developed by the Contractor. This will establish the types of construction vehicle and plant required on site and determines the requirements for haul roads, manoeuvring space, lay down and assembly areas, storage areas, offloading zones and access / egress points. These factors will be incorporated into the Site Operational Plan to be prepared by the Contractor. The location for site offices and staff parking can then be determined.

7.37 In brief the Project Transport Strategy is based upon the following:

- An assessment of the approximate vehicle numbers for both construction vehicles and staff vehicles.
- Development of safe construction vehicle and staff vehicle access / egress points.
- Development of safe and segregated access points for residents during construction of subsequent phases.
- Staff parking area separated from the construction zone.
- Segregated pedestrian access from the staff parking area to the site offices.
- The site-specific transport strategy.

7.38 There will be further development of specific delivery routes with specialist contractors.

7.39 At this stage the following factors will also be considered:

Local Issues

- Identification of preferred and secondary routes and suitability for specific delivery loads.
- Identification of prohibited routes.
- Assessment of existing uses along haulage routes, for example schools, hospitals, residential areas. Identification of any restrictions or risks these might present.
- Local traffic conditions, bottlenecks and or road works.
- Restrictions such as narrow carriageways, low bridges, overhead services and or weight restrictions.

Management Considerations

- The appointment of a transport co-ordinator.
- Set speed limits on site.
- Planning deliveries to minimise local congestion and disruption within the vicinity of the site.
- Schedule deliveries to avoid rush hours, school start and finish times.
- Consider on site storage facilities to limit frequent delivery journeys.
- Identify deliveries that may operate on a 'just in time' basis.
- Arrange for off-loading within the site whenever possible.
- Wheel wash and road sweeping arrangements will also be agreed in conjunction with Manchester City Council.
- Provide advance notice to delivery companies of routes to follow and off loading and unloading arrangements once at site.

Flora & Fauna

7.40 This issue is addressed in detail within the Chapter dealing with ecology (Chapter 16).

7.41 Floating Water Plantain exist in the canal arm and is a European Protected Species, and such work would constitute a licensable activity under the Conservation (Natural Habitats & c.) Regulations 1994 (which implements the EC Directive 92/43/EEC in the United Kingdom). A statutory licence would need to be obtained from DEFRA prior to works commencing. Appropriate measures would need to be agreed with the relevant bodies including British Waterways and English Nature to protect flora and fauna during construction operations that affect this species. Mitigation measures are further set out in Chapter 16.

Water Resources

7.42 Each Contractor will agree its method of working with British Waterways so as to minimise the risk of contamination of the canal.

7.43 If dewatering is necessary, temporary discharge consent into the Ashton Canal may be required and this discharge will need to be monitored for metals and hydrocarbons due to the unknown and possibly contaminated fill materials in the made ground at the site. However, the Contractors will be contractually obliged to comply with British Waterway's Code of Practice.

7.44 If contamination is detected water may be locally treated, tankered away from site for treatment and/or disposed at a suitably licensed site.

7.45 Works should be carried out in accordance with appropriate guidelines and practices. Full details of mitigation measures are set out in the Chapter dealing with ecology (Chapter 16).

Air Quality

7.46 Impacts associated with air quality are further considered within Chapter 17.

7.47 A Dust Management Plan will be agreed with Manchester City Council's Environmental Health Officer and drawn up against the DETR relevant guidance notes and will be secured through a planning condition. The following measures that will be included in the Dust Management Plan will be:

- A daily site walkover to inspect the perimeter and check for dust deposition on fencing and any trees close to the edge of the site. It is also recommended that a weekly inspection of the local area be carried out to check for any evidence of excessive levels of dust deposition that may be a result of the construction site activities.
- Provision of easily cleaned hardstanding area and haul roads within the site for vehicles entering, parking and leaving the site.
- Provision of site personnel and mechanical road sweepers to clean the site hardstanding area, haul roads and to clean any mud or debris deposited by works vehicles from the public highway in the vicinity of the site.
- All vehicles carrying potentially dusty materials to or from the site will be fully sheeted on the public highways.
- Appropriate site controls such as dust suppression will be used during potentially dust generating activities.

7.48 Materials and storage / stock piling areas will be located away from sensitive locations such as residential properties close to the site, as far as reasonably practicable.

Noise and Vibration

This issue is addressed in detail within the Chapter dealing with noise and vibration (Chapter 12).

7.49 Through liaison with Manchester City Council the methodology set out in Chapter 12 will be agreed and secured through a planning condition to minimise on-site and surrounding noise and vibration, in particular to early morning and night time activities. Alongside the acoustic attenuation effect of physical distance, intervening site cabins, site hoardings and the buildings under construction, the impact to the off-site receptors is expected to be minimal. Within the development construction methodology for piling will be developed by the contractor to minimise the effect of vibration to adjacent buildings.

7.50 There is the potential for noise and vibration to be generated and affect residents of Phases 1 and 2 during construction of follow on phases. Appropriate methods will be employed by the Contractor to mitigate these and maintain within relevant statutory limits. The noise and vibrations will be monitored independently to ensure that the methodology put in place will keep the levels within statutory limits. Further details of mitigation are set out in Chapter 12.

Ground Conditions

7.51 Impacts associated with ground conditions are considered within Chapter 13.

7.52 Site workers involved in demolition and construction works are at greatest risk from the hazards identified. It is proposed that:

- Workers will be equipped with appropriate Personal Protective Equipment (PPE) such as disposable overalls, gloves and dust masks and any other equipment deemed appropriate for individual activities.
- All deep excavations should be monitored for the presence of soil gases and appropriate respiratory equipment used if working in deep excavations.
- If unforeseen contamination is encountered during earthworks, works should stop and the material sample be examined by appropriately qualified specialists.

7.53 Site investigation has been carried out to clarify the risks posed by the presence of soil gas and potential contaminants within the near surface soils. Appropriate piling techniques will prevent mobilisation of contamination into the groundwater.

Archaeology

7.54 Impacts associated with archaeology are considered within Chapter 8.

7.55 The general approach to mitigation will be to record above ground features and structures before the commencement of works, and to maintain an archaeological watching brief, by a suitably qualified contractor, for the purposes of recording any archaeologically significant remains during the piling and bulk excavation stages.

TV and Radio Reception

7.56 Impacts associated with the TV and Radio Reception are considered within Chapter 18 - TV and Radio Reception this Chapter also sets out appropriate mitigation measures.

Socio-Economic Assessment

7.57 Impacts associated with the socio-economic analysis are considered within Chapter 11.

Project Working Hours:

- Monday to Friday - 07:30 - 18:00
- Saturday - 08:00 - 14:00
- Sunday - Repair and Maintenance

7.58 In certain circumstance work outside of these hours may be required. A planning condition to be agreed in consultation with the LPA will be required to secure this.

7.59 At peak periods in the construction process it is envisaged that the labour on site may exceed 300 personnel. This labour will be made up of a mixed skill base. ISIS is committed to a Local Labour Agreement as provided for in the Development Agreement with Manchester City Council.

7.60 All labour on site will be fully inducted in on-site procedures such as safety, welfare, deliveries, quality and local conditions. These inductions will be given prior to an operative commencing work on site and regular updates will be provided through a series of site meetings, toolbox talks, and by use of signage and posters on site.

Construction Works General

7.61 It is envisaged that the erection of site hoarding, demolition and the preparation for the piling will form a pre-construction phase. The main works will be constructed behind a timber plywood hoarding, which will be positioned in either the carriageway or footpaths depending on location. The final position will be agreed with the local planning authority.

7.62 All aspects of the construction phase will be monitored to ensure the works comply with statutory and regulatory requirements this includes ensuring that all plant is certified with appropriate test certificates and that the operatives have the correct training for the machinery and tools in use.

7.63 Also, as part of the monitoring and assessment process, works of a noisy and dirty nature will be monitored and assessed to check that they do not breach statutory or local regulations.

Conclusion and Residual Impacts

7.64 This Chapter has considered the major impacts and mitigation measures necessary. Initially the main impact to the Development is the increased traffic flow, due to the construction traffic and subsequently the additional traffic from new residents. To mitigate a Project Transport Strategy agreed with Manchester City Council will be put in place, to reduce and streamline construction traffic on the surrounding roads and a traffic survey has been carried out and has identified minimal impacts on the roads from new residents. The Chapter draws heavily upon other technical Chapters namely; Noise, and Vibration, Air Quality, Contamination, Flooding, Traffic and Transport, Archaeology and Ecology.

7.65 Within the development site, haul roads have been developed to minimise local congestion and disruption to the surrounding roads. Deliveries are to be scheduled to avoid the daily rush hours, storage facilities are to be maximised to reduce the frequency of deliveries and 'just in time' delivery system is to be utilised. All construction traffic leaving site will be sheeted if required and wheel wash and road sweeping facilities will be put in place as part of a Dust Management Plan.

7.66 Phase 1 will be occupied during the construction of Phase 2 and similarly Phase 1 & 2 will be occupied during Phase 3. Every effort has been made in the planning of the each phase to minimise the contact of the residents and construction traffic / operatives, with a shared vehicular access during Phase 2 being the only unavoidable direct contact, appropriate policing of this interface will be developed by the contractor.

7.67 Each phase of the project will involve working in and around the canal; all works associated with this will be agreed with British Waterways and will comply with their 'Code of Practice'. All works agreed will be further transmitted to the users of the canal and towpath by posters and relevant signage.

7.68 In addition to the works in and around the canal, there is a requirement to drain the canal arm during Phase 2 to allow refurbishment. This will involve the removal and relocation of 'floating water plantain' which is a protected species and will require a Statutory Licence being granted prior to drain down works commencing.

7.69 During the construction phase, one of the most significant impacts is the risk of contaminants from the construction works leaching into the canal and / or the surrounding land. To minimise this risk, each contactor will be contractually obliged to get approval of their method of work in conjunction with British Waterways and have appropriate 'clean-up' measures in place, this will be achieved through planning consent.

7.70 Archaeology during the construction phase is one of the most important elements when considering the earthworks, to ensure that archaeological finds are identified and recorded, there will be the need to employ a suitably qualified Contractor to undertake a watching brief during the piling and bulk earthworks of each phase.

7.71 The major economic boost to East Manchester will be the additional labour requirement during construction and the additional jobs that a development such as this will bring to the area once completed.

7.72 In conclusion, appropriate measures have been identified to ensure minimal disruption and the residual impacts identified to the environment of the development and the surrounding areas during each of the construction phases.

Summary of Impacts

7.73 The potential impacts, proposed mitigation and residual impact are summarised in the following table, Figure 7.1:

Figure 7.1: Summary of Impacts - Construction and Phasing

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact	Comment
Construction of Phase 1	Visual impact of Site Works	Negative	Short Term	Local	Erection of hoarding painted in appropriate hues.	Negligible	-
Construction	Movement of Construction Traffic	Negative	Medium Term	Local	Project Transport Strategy agreed with Manchester City Council put into place	Negligible	Identify preferred and secondary Construction Traffic Routes to the Project
Construction	Increased Construction materials dispersed onto the roads	Negative	Medium Term	Local	Project Transport Strategy agreed with Manchester City Council put into place	Negligible	Wheel Wash and Road Sweeping facilities to implemented
Construction	Construction fuels and oils spreading into canal and/or water courses	Negative	Medium Term	Local / (Regional)	Ensure that Contractors are using the most appropriate method of working and that a suitable Environmental response team is in place.	Negligible	-
Construction	Material Transfer	Negative	Medium Term	Local	Dust Management Plan agreed with Manchester City Council put into place	Negligible	Ensure that road sweeper is used to damp down haul roads and that all vehicles are sheeted to and from site.

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact	Comment
Construction	Noise impact during all construction works	Negative	Medium Term	Local	Use of Site Hoardings, Cabins and the buildings under construction to minimise noise transfer beyond site boundaries	Negligible	Noise Impact Assessment to be carried out at regular interval to assess areas with adverse acoustic attenuation.
Construction	Vibration impact during all construction works	Negative	Medium Term	Local	Best Practicable Means to be employed and control of working hours		
Construction	Contaminants associated with Ground Conditions	Negative	Short Term	Local	Ensure Contractor provides Ground Workers with appropriate PPE and that correct method of works and monitoring is in place.	Negligible	Any unforeseen contaminants will stop work and analysis will be undertaken before work continues in the area.
Construction during earth works	Loss of Archaeological Finds	Negative	Short Term	National	Archaeological Watching Brief put in place by a suitable Contractor.	Negligible	
Construction	Loss of TV and radio reception	Negative	Long Term	Local	Change of aerial type, or change in aerial height, or resite of the existing aerial. Alternatively install digital TV services or satellite service.		

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact	Comment
Construction	Disruption to Canal and towpath	Negative	Short Term	Local	Contractors to liaise and comply with British Waterways and their Code of Practice	Negligible	
Construction	Disruption to Flora & Fauna	Negative	Long Term	Regional	Agreement for the sequence of works to drain canal with British Waterways and English Nature		

8. Archaeological & Historic Resource

Introduction

8.1 The archaeological element of this ES contains a review of the planning policy background, the geology and topography and a full chronological assessment of the archaeological potential of the site, supported as necessary by full bibliographic, cartographic and stratigraphic data. This chapter therefore comprises a summary of the available baseline evidence, examines potential impacts on the resources identified and identifies mitigation measures designed to mitigate the impact of development and identify residual impacts. This section is concerned with 'below-ground' archaeology. All relevant illustrative material relating to this section is contained in Appendix 8.1.

8.2 This chapter has been prepared by CgMs Consulting in consultation with the Greater Manchester Archaeological Unit (archaeological advisors to the Local Planning Authority).

8.3 Although there are two development options considered in this Chapter, as the footprint is the same for both options, the impact, as far as archaeological deposits are concerned, remains the same

Potential Impacts

8.4 Potential impacts on archaeological remains are the demolition of existing buildings, and the construction of buildings and infrastructure. Construction and earthmoving activity within areas of the site not containing archaeological remains will have no impact upon such remains. The significance of impact has been assessed utilising the importance of identified cultural heritage features and the magnitude of impact on these features. The criteria for establishing the importance of archaeological remains are set out in Figure 8.1.

Figure 8.1: Criteria for assessing importance

Importance	Criteria
National	Scheduled Ancient Monuments & Areas of Archaeological Importance Archaeological sites of schedulable quality & importance
Regional	Local Authority designated sites Undesignated sites of demonstrable regional importance
Local	Sites with specific and substantial importance to local interest groups Sites whose importance is limited by poor preservation and poor survival of contextual associations
No Importance	Sites with no surviving archaeological component
Unknown	Importance cannot be ascertained

8.5 The assessment of significance of impact has been undertaken utilising the criteria set out in Figure 8.2.

Figure 8.2: Criteria for assessing significance of impact

Importance of remains	Quantitative predicted impact			
	Extensive	**Substantial**	**Slight**	**No Impact**
National	Severe	Major	Moderate	Not Significant
Regional	Severe	Major	Minor	Not Significant
Local	Moderate	Moderate	Minor	Not Significant
No importance	Not Significant	Not Significant	Not Significant	Not Significant
Unknown	Potentially major/severe	Potentially moderate/major	Potentially minor/moderate	Not Significant

Assessment Methodology and Terms of Reference

8.6 The methodology comprised:

(i) Discussion with the Greater Manchester Archaeological Unit (archaeological advisors to the LPA) on the general background of the proposed development, the archaeological background of the area and to identify the main issues that required assessment.

(ii) The production of a desk-based assessment by Mike Coxah and Lynne Gardener (Appendix 8.1). Sources reviewed included Greater Manchester SMR, historic cartographic and documentary sources at the Manchester Central Library, and British Waterways Heritage Register.

(iii) Further discussions with the Greater Manchester Archaeological Unit regarding the scope of mitigation measures required.

Planning Policy Guidance Note 16 - Archaeology & Planning

8.7 The planning policy background relating to archaeological matters is set by PPG16: Archaeology and Planning, which provides guidance for planning authorities, property owners, developers and others on the preservation and investigation of archaeological remains. In short, government guidance provides a framework which:

- Protects Scheduled Ancient Monuments
- Protects the settings of these sites
- Protects nationally important un-scheduled ancient monuments
- Has a presumption in favour of in-situ preservation of important remains
- In appropriate circumstances seeks adequate information (from field evaluation) to enable informed decisions
- Provides for the excavation and investigation of sites not important enough to merit in-situ preservation.

Development Plans

8.8 The relevant development plan policy framework is provided by The Manchester Plan UDP. Part 2 City Wide Development Control Policy DC20.1 covers the protection of archaeology:

DC20.1 - Archaeology

The Council will give particular careful consideration to development proposals which affect Scheduled Ancient Monuments and sites of archaeological interests, to ensure their preservation in place. In particular:

A applications for consent to alter Scheduled Ancient Monuments or sites of archaeological interest or their settings should be accompanied by an evaluation and assessment of the implications of the proposal.

B the Council will have special regard to the desirability of securing the preservation of ancient monuments and other sites of archaeological interest and their setting in place. It will not permit development that, in its opinion, would adversely affect Scheduled Ancient Monuments, or other sites of archaeological interests, and their settings. In exceptional cases where development is inevitable, the Council will look at the scope for combining preservation in place with limited investigation and recording.

C where the preservation of Scheduled Ancient Monuments and sites of archaeological interest in place is not appropriate, the Council seek to gain full and proper recording of the site through early consultation between the applicant and approved archaeological organisation.

8.9 There are no Scheduled Ancient Monuments either within, or in the immediate vicinity of, the proposed development site therefore Local Plan Policy 20A is not relevant. However, Policy 20B and 20C are relevant to the proposed development and have been applied in relation to the assessment of the archaeological potential of the site and the impact that the proposed development may have on any remains present.

Baseline Conditions

Archaeological and Historical Conditions

Prehistoric

8.10 There are no Prehistoric remains recorded in the vicinity of Islington Wharf. This lack is thought to be the product of the local boulder clay geology as there is growing evidence that Prehistoric settlement and activity, within the region, is more associated with lighter, better-drained soils. The site is therefore considered to have low potential for Prehistoric remains.

Roman

8.11 A small fort was established in AD 79 to the north of the River Medlock, in the area now known as Castlefield. This later developed into a larger military fort with civilian settlements to both the north and eastern side. To the north of the site there is evidence for a Roman road running between Manchester and Oldham. However, there are no Roman remains recorded in the vicinity of the site and therefore, it is considered to have low potential for remains of this period.

Medieval

8.12 The Medieval township of Manchester was established before 1066 with the focus of the settlement near the Cathedral. The township was part of the Salford Hundred and was not considered to be of any great importance. In the 14th century, Ancoats is mentioned as one of eight hamlets within the township of Manchester. However, the site would have been within the agricultural fields of Ancoats and as there are no records of Medieval remains in the vicinity of Islington Wharf, it is considered to have low potential for remains of this period.

Post-Medieval

8.13 Following the emergence and growth of cloth manufacture and commerce in the 16th century, Manchester experienced a massive increase in population, which was further boosted by an increase in the textile industry in the 18th century. Associated with this was the expansion of Ancoats, which began to develop from c.1785 and was further boosted by the construction of the mill complexes in the late 18th/early 19th century.

8.14 The construction of a local system of canals was a major factor in attracting large-scale industry to the area. The Ashton Canal opened in 1796 with the Rochdale Canal being open between Manchester and Rochdale by 1799. During the 1st half of the 19th century the Ashton Canal prospered carrying coal to coal merchants, the mills and other industry, and bringing out manufactured goods. A sideline was also the selling of water to the owners of steam engines. In 1848 the Manchester, Sheffield and Lincolnshire Railway bought the Ashton Canal following which it prospered by feeding goods into the railway system.

8.15 The cotton industry continued to expand until it was disrupted by WWI following which, it staged a recovery but then went into steady decline after World War II. Although spinning was undertaken as late as 1959 in the Union Street Mills, Ancoats, went into industrial decline with an associated drop in population with two major slum clearances in the 1930s and 1950s. Coal and other goods were still carried on the Ashton Canal until the early 20th century. However, this trade also began to decline in the 1930s with the quantity of goods carried falling from 50,000 tons in 1933 to just 7 tons in 1955. By the early 1960s the canal was virtually unnavigable. However, it was restored in 1971.

8.16 The earliest map that shows the site at a reliable and reasonable scale is Green's Map of Manchester & Salford (1787-94) at which time Back Street (later to become Back Mill Street) has been constructed and fronted by terraced housing and gardens with the rest of the site being agricultural fields. The layout of the 'Intended Ashton Canal' and the surrounding streets is shown but construction had not started. The Cole & Roper map of *c.* 1801 shows the route of the Ashton Canal together with the location of the Islington Branch. The Islington Branch was shown as a simple L-shaped cut but, compared to other maps, the position is too far to the west. The Banks & Co. map (1831) depicts four houses fronting onto Mill Street, a warehouse bridging the canal and adjoining the towpath bridge and the lock houses. The small brick built shed surviving on the northern end of the site may be a remnant of the line of small buildings situated along the back of the western wharf. The Bradley Street plots were more intensely developed. Moores Cotton Mill is shown fronting onto Mill Street.

8.17 The 1848 OS 60" scale map shows both sides of the canal branch being used for coal wharfs and that short basin leading off the eastern side of the canal had been infilled. The Bradley Street area was occupied by housing and small industrial premises, with commercial properties including two taverns fronting onto Great Ancoats Street. Moores Mill had been significantly extended sometime since 1831 with a boiler house noted. The major changes shown on the 1893 OS 25"scale map is a spindle works on the eastern side of the wharf, some minor changes to the layout of buildings on both sides of the wharf. Moores Mill had been demolished and replaced by an Industrial School. The site is unchanged on the 1908 OS 25" scale map. By 1922, the spindle works had become a toy balloon works with a chain works having been constructed immediately to the north and some remodeling of some of the buildings on the west wharf. The 1955 OS map shows the eastern wharf occupied by an engineering works, the toy balloon factory as having been extended, a small engineering works constructed at the southern end of Sweden Street and a number of buildings demolished between the School of Building and Bradfield Street and at the south-west end of Mill Street. The majority of the buildings occupying the site were demolished piecemeal between the early 1970s and the mid-1990s.

Results of Analysis - Assessment of Impacts

8.18 The site is considered to have low potential for remains of all archaeological periods prior to the 19th century. There is the potential for the foundations of the former housing fronting Bradfield Street, Back Mill Street and Sweden Street to survive. However, such remains, if present, would be of local archaeological importance.

8.19 The primary area of archaeological potential is the site of the 18th/19th century Moores Cotton Mill. Cartographic sources indicate that there was an associated boiler house and it is likely that there would have been an engine house, the location of which is unknown. A geotech site investigation undertaken in February/March 2004, recorded significant depths of made ground (up to 3.20m below ground level) which included brick wall foundations and a sandstone slab which could be either the remains of Moores Mill or the Manchester School of Building. The made ground could be modern in origin (i.e. deriving from the demolition of the School) or could be archaeological in origin and relate to deposits associated with the mill. Whatever the precise date and origin of these remains, the results of the site investigation indicate a potential for 19th century industrial remains in the northern portion of the site. Such remains are considered to be of local importance.

8.20 There is the potential for the foundations of the former canal wharf buildings on the western side of the canal wharf. The geotech site investigation indicates that there has been relatively little modern ground disturbance in this area (up to 0.95m below ground level), therefore, such remains could be reasonably well preserved. Such remains are considered to be of local importance. The depth of modern made ground on the eastern side of the canal wharf (2.25m – 3.30 below ground level) indicates that the construction of the former engineering works destroyed the remains of any industrial remains in this area.

8.21 Remains of the former over-warehouse may survive on the western side of the canal wharf immediately to the north of the towpath bridge. The geotech site investigation indicates that there has been relatively little modern ground disturbance in this area (up to 0.70m below ground level), therefore, such remains could be reasonably well preserved. Such remains are considered to be no more than of local importance.

8.22 Therefore, construction and groundwork operations have the potential to encounter industrial archaeological remains of local importance. Phase 1 of the proposed development will potentially impact upon any surviving remains associated with the former housing and part of the site over-warehouse. Phase 2 will potentially impact upon Moores Mill, an area of former housing and canal buildings on the western side of the canal arm. Phase 3 will impact canal buildings on the eastern side of the canal arm and a former arm of the canal basin. The two options (i.e. with and without the hotel) will have the same potential impacts.

8.23 Should any of the deposits outlined above be present, construction operations may have a direct physical impact of partially or totally removing them either during cut and fill operations or the insertion of the piled foundations. The impact on such remains is likely to be extensive (Figure 8.3). Therefore utilising the assessment criteria set out in Figure 8.2, the impact of the proposed development on archaeological remains if still present on site is considered to be moderate.

Proposed Mitigation

8.24 The proposed mitigation works will be two-staged. The first stage will be a programme of evaluation trenching targeted to assess the presence/absence and state of preservation of any remains present. Should the evaluation establish that no archaeological remains survive on site, the proposed development would have no archaeological impact and therefore, no further mitigation measures would be necessary. The scope of the evaluation will be agreed with the Greater Manchester Archaeological Unit and the Local Planning Authority. It will be based on the significance of the results of the evaluation and will be secured by a planning condition.

8.25 Should the evaluation establish that industrial archaeological remains do survive, a second stage of mitigation comprising the excavation and recording of such remains prior to construction commencing, or a watching brief during construction will be undertaken with the results being published following completion of the post-excavation analysis. The scope of any second stage mitigation measures required will be agreed with the Greater Manchester Archaeological Unit and the Local Planning Authority. It will be based on the significance of the results of the evaluation and will be secured by a planning condition.

Conclusions and Residual Impact

8.26 The site is considered to have low potential for remains of all archaeological periods prior to the 19th century. There is the potential for the foundations of the former housing fronting Bradfield Street, Back Mill Street and Sweden Street to survive. The primary area of archaeological potential is the site of the 18th/19th century Moores Cotton Mill and its boiler house. There is also the potential for the foundations of the former canal wharf buildings on the western side of the canal wharf and a former over-warehouse on the western side of the canal wharf immediately to the north of the tow-path bridge. These remains are considered to be of local importance.

8.27 Should such deposits be present, construction operations may have a direct physical impact of partially or totally removing them either during cut and fill operations or the insertion of the piled foundations. Therefore the impact of the proposed development on archaeological remains if still present on site is considered to be moderate.

8.28 Once the evaluation and any subsequent mitigation measures have been fully implemented, the proposed development will have no residual archaeological impacts.

Summary of Impacts

8.29 Figure 8.3 presents a summary of the assessment of the importance of potential archaeological deposits, the predicted impact of construction of infrastructure, buildings and landscaping on the potential archaeological deposits and the significance of the predicted impact.

Figure 8.3: Summary of Impacts

Potential archaeological deposits	Importance of potential archaeological deposits	Quantitative Impact	Significance of Impact	Mitigation	Residual Impact
Moores Mill	Local	Extensive	Moderate	Evaluation/ excavation	None
Canal/coal wharf buildings	Local	Extensive	Moderate	Evaluation/ excavation	None
Over Warehouse	Local	Slight	Minor	Evaluation/ excavation	None

9. Historic Environment

Introduction

9.1 This Chapter has been prepared by Heritage Architecture Limited. It considers the effect of the proposal on listed structures and their historic setting. It should be read with reference to the Visual Impact Assessment in Chapter 10.

9.2 The Chapter also consider the effect of both Options I and II as detailed in Chapter 3. However, there are no discernable differences between the two options in relation to the historic environment and hence the conclusions reached for both options are identical.

9.3 This Chapter and the planning and listed building applications are supported by a full Planning Policy Guidance Note 15 (PPG15) assessment which is appended to the Environmental Statement (Appendix 9.1).

9.4 The historic background to the area is given in the desk-based assessment provided by Mike Coxah and Lynn Gardner, 2003. This document is included in Appendix 8.1.

9.5 The site has historic significance as part of the Islington Branch of the Ashton Canal, an early part of the canal system expansion in the northwest. The canal is now being revitalised as part of the waterways leisure system and is of national importance.

9.6 The area is now derelict but is undergoing revitalisation. The listed structures are affected visually, and there are alterations to them to accommodate access and permeability provisions. A recent utility building abutting the listed bridge is to be demolished. This is an intrusive structure of negative value.

Potential Impacts

Lock No. 1

- Intervention to sub-structure and possible stonework retaining elements - neutral impact.
- Removal of detrimental and negative present structures comprising steps and retaining elements - of no beneficial significance.
- Visual impact upon setting - beneficial.

Bridge

- Removal of intrusive and negative utility building - beneficial.
- Intervention to bridge parapet and pier brickwork and repairs - neutral.
- Removal of unstable banking to allow full appreciation of the bridge structure - beneficial.
- Construction of new landscaping and access provisions - neutral.
- Removal of remains of boundary retaining wall - low significance.
- Construction of new access steps and landscaping of tow path - neutral.

Wider Site

- Impact visually and in townscape of major new construction upon settings upon settings of the listed group.
- Possible wider impact upon more distant vistas and structures.
- These issues are addressed in detail in the Visual Assessment chapter.

Methodology

9.7 The following steps have been taken in relation to methodology:

- Examination of significance and appraisal of the historic importance of the affected structures. Research from printed sources, maps and own knowledge of the pertinent structures and environs. Background to canal development in the UK.
- Comparison of field conditions with historic documents, including photographs. Assessment against policy tests in PPG15 and BS 7913 : 1998.
- Incorporation of condition and structural reports to assist in appraisal relative significance of the structures.
- Detailed visual appraisal of impact of new work using accurate photomontage perspectives and other drawings. Assessed against detailed evaluation of baseline conditions.

Baseline Conditions

9.8 The site area is largely derelict. The previous street houses and various buildings have been demolished. A programme of photographic recording of the canal was carried out in the 1960s.

9.9 The structures and settings that are affected by the proposals comprise locks no. 1 and no. 2. The tow path footbridge over the Islington branch and the lock keepers cottage. These form a group around the basin and wharf, all of contemporaneous date. The cartilages of the structures probably encompass the basin and wharf sites, and settings will be affected by any new development within visual influence.

9.10 The lock no. 1 has been altered from a double lock to single, has had new lock gates and other alterations. The widening at the Great Ancoats Street bridge has compromised its setting and visual amenity. The extension to the bridge also removed the original horse towing ramp. The present immediate setting is poor, of low grade materials and is aesthetically barren.

9.11 The tow path bridge was augmented by accommodation - possibly houses and offices - spanning the Islington branch and supported partly on the bridge parapet. This was a highly idiosyncratic feature and a rarity. The Rochdale Canal at the Chorlton Street Bridge has a similar construction, and is still inhabited.

9.12 Now only remnants remain which are of archaeological importance. The adjoining boundary wall is largely derelict, only a relatively small section remains standing. There is evidence and remains of later structures that incorporated parts of the wall. There have been openings formed and one comparatively recently. Has allowed access to the wharf. However, this is now unsound and is not suitable for public use.

9.13 The condition of the brickwork is poor suffering from weathering, decay and structural failure. Parts of the wall may be salvaged, including the sandstone copings, for use in the landscaping works.

9.14 At present there is no public access to the wharf side, which is still in operational use.

9.15 The bridge parapet retains the remains of the building that was erected upon it. This appears to have been in residential use prior to demolition. The remains are in fair condition, although there is some structural distress to the bridge, (see Arup engineer's report). The parapet has been crudely formed by cutting down the elevation, building in the openings and laying a concrete coping/weathering. The latter is ineffective, and has no drips.

9.16 The utility building abutting the bridges fixed to it marginally and is doubtful as to whether it falls within the remit of an attached structure as implied by the Act. The building is erected on partly made-up ground with an embankment and retaining wall adjacent to the bridge that are in poor structural condition.

9.17 Settings are in a cleared or semi-derelict state, or in progress of works of clearance. The canal is being revitalised to allow full public access. Remains of derelict structures are identifiable from historic photographs, but have only limited significance unless listed or within curtilage. The utility building adjacent to the bridge and the lock keeper's cottage. The general dereliction comprises the setting of the basin and branch canal.

Results of Analysis - Assessment of Impacts

9.18 Set out below is an assessment of the impacts of the development upon the historic environment. This assessment of impacts is also considered in detail in the PPG15 Statement attached at Appendix 9.1.

9.19 As a context, PPG 15 p.3.4 states that Applicants ... must be able to justify their proposals. They show works ... are desirable or necessary. PPG 15 p. 3.5 then gives the issues that are relevant. These are examined below.

Importance

9.20 Intrinsic architectural and historic interest, rarity : national and local. This has been expounded above. Both the lock and the bridge, despite alterations and general condition. Both are significant nationally and locally as part of the canal network at the early years of major expansion. The accommodation element to the bridge may have special rarity value.

Particular physical features

9.21 The lock structure, its stonework are of paramount importance. This is all to be preserved, and the new ramp is formulated to avoid any major damage (refer to structural report). There may be some alterations and repairs, footing stones dependant upon what is revealed when excavations commence.

9.22 The bridge retains its swept abutments to the towpath, which predate the later "accommodation" prospect, and are not part of the application. The remains of the door surrounds and quoins indicating the previous structure, are all to be retained and repaired. This provides the archaeology of the canal bridge structure. It is however, also recorded in photographs (see appendix and maps that give a better impression of the form).

9.23 There are no signs of structural intrusion on the arch face of the bridge indicating that the main structure spanned the canal arm. There were probably secondary structural supports with the parapet external wall.

9.24 The continuation retaining wall has little, if any, merit in its own right. It is a later structure, and has little relevance now that its original context – coal wharfs – have been long gone. The relationship to other demolished structures has also been lost. It can be seen that the buildings and structures around the wharf did evolve and change over time as different uses were put into operation. It is in the nature of many such structures to be ephemeral. The remains of the walling on then parapet are of far higher significance.

9.25 The office building is of no merit.

Buildings, setting, contribution to the local scene

9.26 The lock plays a highly significant part in the setting of the basin and forms a group with the lock keepers cottage, the bridge and lock no. 2. The basin area between the two locks allowed the barges to swing in and out of the Islington Branch, and to have mooring space while awaiting passage through the locks. The area also served the Corporation store yard on the southeast bank.

9.27 At present the environs of the wharf are detrimental to the setting of the basin and locks; and the office building is a negative contributor to character.

Extent that proposed works would bring substantial benefits for the community

9.28 The work to the lock allows access to the towpath, opening up the continuing leisure benefits of the canal. The removal of the present concrete steps and the construction of a new retaining wall, is a significant enhancement to the setting of the lock structure. The new work is to be carried out in materials and forms that have affinity with the industrial aesthetic of the lock, but are clearly of the present day.

9.29 This is fully in accordance with BS7913 : 1998 (para 7.4.3 g) and PPG 15.

9.30 The removal of the recent office building adjacent to the bridge, would, in itself, be a major enhancement. However the present built-up abutment, which is now unstable, is concealing the form of the bridge. This will be removed as far as possible to expose the full arch form and the abutments and springing. The area will be stepped and landscaped to provide access, utilising the bridge for its original purpose, for crossing to each side of the branch. Brickwork will be repaired, and the concrete parapet will be replaced with salvaged stone.

9.31 The works to the wall will require removal of areas of remaining poor brickwork, salvaging any re-usable material. This allows subtle regarding and the construction of steps to allow access to the wharf side. The immediate environs will form a setting for the proposed new buildings on the wharf area. This echoes the previous access through the wall to the lower level, now derelict. The overall benefit is of high value in allowing continued public access to enjoy the canal side environment, allow the continuation of universal access to the towpath; removal of intrusive structure and constructing new permeable pedestrian routes with access to landscaping. The present dereliction and decay is highly detrimental to the setting of the historic group of structures, and has negative value to the character of the environs. The works have major benefit independently and more so as elements of the larger regeneration scheme.

Proposed Mitigation

9.32 No adverse impacts have been identified as part of the proposals. The proposal has been sensitively designed in such a way as to incorporate any potential mitigation into the current works to the listed structures.

9.33 The benefits that flow from this include permeability and access to the wharf area from the public tow path, salvaging of reusable materials, and enhanced landscape setting to the bridge, lock keeper's cottage and the basin.

9.34 Mitigation in respect of any impact upon settings is formulated upon the overall benefits of revitalisation and regeneration of the area.

Conclusions and Residual Impacts

9.35 The benefit that arises from the works far outweigh any possible adverse effect or impact. There is no identified major intervention or impact upon the listed structures or their setting or any significant residual impact.

Summary of Impacts

9.36 The potential impacts, proposed mitigation and residual impact are summarised in the following table, Figure 9.1:

Figure 9.1 - Summary of Impacts Historic Environment

Activity	Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact
New ramped footpath to Lock No.1	Removal of made-up ground, removal of modern interventions, possible alteration/adjustment footing bed stones to retaining structure	Physical intervention upon original structure. Neutral	Permanent	Negligible, local	Allows universal physical access to the towpath	Negligible
New ramped footpath to Lock No. 1	Visual, affects setting of the listed structure	Positive	Permanent		Visual improvement over existing condition	None
Demolition of utility building, adjustment to bridge	Removal of intrusive, negative structure, removal of unsound embankment	Positive	Permanent	Major, local	Allows restoration of part of bridge structure, exposes the arch and rear face	None
Construction of access steps and associated landscaping. Demolition of part of retaining wall structure, new construction and landscaping	Neutral/Negative	Positive, minor negative elements	Permanent	Medium, local	New structure adjacent to the bridge will not be structurally enjoined, but be separated with a soft joint. Historic fabric will be preserved and repaired. Salvaged elements will be re-used. Public permeability and access is created	None

10. Visual Assessment

Introduction

10.1 This Chapter has been carried out by Broadway Malyan and considers the visual impact of the proposals.

10.2 A site survey was carried out in October 2004 with the aim of establishing the likely impacts of the proposed development on the existing landscape character of the site and the visual amenity of local residents and other potential receptors.

10.3 This Chapter considers both options for development (Option I and II), the details of which are set out in Chapter 3.

10.4 This Chapter is supported by a number of plans contained within Appendix 10.

Methodology and Terms of Reference

10.5 This visual impact assessment has been carried out in accordance with the Guidelines for Landscape and Visual Impact Assessment jointly published by the Landscape Institute and Institute of Environmental Assessment in 2002 (Second Edition).

10.6 The area of appraisal relates, in broad terms, to the maximum likely extent of the visual envelope of the existing site and the development proposals. The approach to the assessment and the criteria used for the assessment of impacts are set out below.

10.7 Visual impacts are considered to constitute an intrusion into, or change to, an existing view arising from the development. The significance of impacts is assessed by the changes arising from the development to individual receptors' views of the development and associated elements e.g. local residents, shoppers or motorists passing through the area.

10.8 Standard impact assessment criteria, outlined below, have been applied to the landscape and visual assessment. In order to establish the baseline situation, the existing landscape and proposed baseline conditions have been evaluated using both field and desk studies. With the use of field data, individual areas of common landscape character were identified.

10.9 The Zone of Visual Influence (ZVI) is that area within which the development proposals are expected to be visible and is influenced by topography, built form and vegetation. The ZVI for the development was first estimated approximately from map based study, in order to define the extent of the study area, and then plotted more precisely using on-site observations. The key potential impacts of the project upon the baseline visual receptors have been identified and assessed, and where appropriate, mitigation measures proposed to reduce or eliminate significant impacts.

Criteria for Assessment

10.10 Visual impacts are defined as Major, Moderate or Minor and may be qualified as Adverse or Beneficial:

- during construction;
- during site operation.

10.11 Impacts are considered at these times in order to isolate the effects of construction from the completed development. Further consideration is given to the effects of maturing soft landscape treatments to allow a projected interval of 15 years for scheme planting to become established.

Visual Impacts

10.12 Visual impacts result from changes to the appearance of the urban environment as a result of the development proposals either intruding into, or obstructing existing views, or by their overall impact on visual amenity. The degree of visual impact depends not only on the degree of change brought about by the development, but also the sensitivity of the receptors to visual change.

10.13 The criteria used to assess the degree of visual impact are as follows:

- value of existing views;
- the degree of change to existing views;
- sensitivity of the receptor;
- the availability and amenity value of alternative views;
- activity of the receptor; and
- the period of time the receptor is exposed to the change.

10.14 Receptors vary in their degree of sensitivity to change depending on such factors as proximity, activity and period of time exposed to the change. Sensitivity is assessed as High, Medium or Low. For example, the permanent views of residents and passive views from footpaths and other public spaces would be considered to be more sensitive than the transient views of motorists or temporary views of nearby workers.

10.15 Visual impacts have been assessed as Major, Moderate or Minor, as defined below.

- **Major** impacts may be defined as highly sensitive receptors exposed to intrusion, obstruction or change of a high or medium magnitude for prolonged periods;
- **Moderate** impacts may be defined as the result of moderately sensitive receptors exposed to intrusion, obstruction or change of a medium magnitude, or highly sensitive receptors exposed to intrusion, obstruction or change of a low magnitude;

- **Minor** impacts may be defined as the result of receptors of low sensitivity exposed to intrusion, obstruction or change of a low or medium magnitude for short periods of time.

Limitations of Assessment

10.16 Survey work was undertaken during in October 2004. The site is on the eastern edge of Manchester city centre, currently the subject of a long term regeneration programme, of which these proposals form a part. Large areas of nearby land are currently under development, derelict, or partially cleared to prepare for development. The baseline at the time of the survey is therefore a temporary situation which will undergo considerable change over the next 5-10 years. The precise nature of these changes is difficult to predict, and the potential receptors have been identified on the basis of the current condition. A future baseline has been outlined on the basis of current assumptions and proposals, and the probable modifications to impacts of likely developments has been taken into account.

10.17 As part of the redevelopment process, access to certain areas of land were limited at the time of survey and constrained the assessment of certain visual impacts, although this is not considered to prejudice the overall assessment to any significant extent.

Baseline

Planning Context

10.18 Chapter 5 of this report provides a summary of the wider planning policy context. However, there are a number of policies of relevance to the landscape quality and visual impacts of the development, identified in the Manchester UDP (adopted 1995) and subsequent documents. These are illustrated in Figure 01 at Appendix 10.1 and summarised below.

National and International Designations

10.19 There is a proposal for a World Heritage Site (WHS) within Manchester consisting of a number of individual sites in Salford and Manchester, linked by the Rochdale, Bridgewater and Manchester Ship Canals. These sites have been proposed for their significance in the growth of Manchester as the world's first major industrial city and for the coherence and quality of their surviving historic buildings and structures. The Ancoats area and a part of the Piccadilly basin, to the west of the development site, form one of the component parts of this proposed linear WHS and views from both areas would be affected by the current proposals. The main implications of the potential adoption of these sites as part of the Manchester WHS would be to further reinforce the degree of protection already afforded to the listed buildings and structures within the sites and to place greater emphasis on the quality and sensitivity of developments in surrounding areas.

Conservation Areas

10.20 Ancoats - This area, along the northern side of the Rochdale canal corridor, is of historic importance for its high concentration of listed mills and associated Victorian industrial buildings. The Ancoats Conservation Area aims to conserve the architectural heritage by finding new uses for the mills and create an urban village, combining a residential community with thriving businesses and commercial ventures. Work has now been underway for several years and a large number of buildings and public spaces have been brought back into use.

10.21 Smithfield - This area comprises the majority of the Northern Quarter, historically the centre of Manchester's textile trading outlets, closely linked to the manufacturing activities in the Ancoats and East Manchester area. Its smaller scale, tighter urban grain and mixed character lend it a distinct quality to the rest of the city centre, which has attracted specialist and independent retailers, designers and artists in recent years.

Local Designations for Nature Conservation

10.22 Site of Biological Interest - SBI's are non-statutory sites, recognised in the UDP for their nature conservation value at a regional scale. The Ashton Canal Corridor is a designated SBI due to its value as a habitat for a wide range of aquatic species, including two which are on the local Biodiversity Action Plan (BAP) target list. including the European Protected Species, floating water plantain (Luronium natans). The canal arm is specifically noted for containing both floating water plantain and the nationally scarce grasswrack pondweed (Potamogeton compressus). The ecological impacts of this development are considered in detail in Chapter 16 of this report.

Local Policies for Landscape and Recreational Value

- A small area of land east of the site, on Pollard Street is designated as a Playing Field for the adjacent Primary School (EM30).
- The Rochdale and Ashton Canals are both identified as 'Major Recreational Routes' (policy E3.4) as part of the policy of creating a 'network of safe and attractive linear recreational open spaces by linking and making better use if river valleys, canals, etc'. This policy aims to improve access, water quality and the nature conservation value of these corridors.

Other Local Policies for Environmental Enhancement

10.23 Policy E3.3 identifies Great Ancoats Street and Pollard St as Major Road Improvement Corridors with the aim of encouraging 'new development of the highest quality to improve the appearance and environment of the city's major orbital roads.'

Regeneration Areas

10.24 New Islington - The adjacent New Islington area, between the Rochdale and Ashton Canal, has been designated a Millennium Community under the Government's Millennium Communities Initiative. The proposals will include increasing the density of development, the mix of uses and the range of tenure.

Listed Buildings and Structures

10.25 Those of particular relevance to this study form a group adjacent to or within the development site, whose main components are:

- The towpath bridge over the Islington Branch, from around 1800 (Grade II);
- The adjacent Lock Keeper's Cottage from the same period (Grade II);
- The adjacent 18th Century Lock No 2 (Grade II).

10.26 Impacts on these structures are covered in Chapter 9 of this report. However, these features form an important part of the visual context of the site and the impacts of the proposed development on views to these structures is considered below.

Site Context

Landscape Character and Development

10.27 The site is on the eastern edge of Manchester city centre, adjacent to Great Ancoats Street, in an area which was the origin of much of Manchester's earliest industrial growth, generated to a large extent by the development of the Rochdale and Ashton canals in the late 18th century. It is close to the Ancoats area which is now a Conservation Area and seen as one of the world's first Industrial estates.

10.28 The area reflects both the sharp decline in the fortunes of Manchester's traditional industrial base in the second half of the 20th century and recent upturn. Both sides of Great Ancoats Street comprise a mix of older industrial or distribution activities, derelict buildings or cleared land, and recently refurbished or new build blocks, which reflect the new Manchester, combining residential uses with commercial and retail premises. The area to the east of Great Ancoats Street in particular is the subject of a long term, on-going regeneration process, which is likely to transform its character and community completely over the next decade.

10.29 The site's location on the edge of the city centre place it firmly in a highly urban, built up context. Views from the site, and for most key receptors within the study area, are constrained by the scale and density of existing city centre development and consist primarily of a juxtaposition of built form and infrastructure punctuated by a number of tall, landmark buildings which act as focal points of reference. East from the site, the urban grain fragments and deteriorates considerably, due largely to the decline of these industrial areas over the last decades of the 20th century, and to the more recent demolition and clearance of large areas, in preparation for the implementation of long term regeneration programmes. This is an urban landscape in a state of rapid transformation, capable of accommodating significant change.

Landscape Character Zones

10.30 Due to the scale of the proposed development, the study area comprises a large part of Manchester City Centre and its eastern periphery. Within the study area, there are a number of broad character zones which are affected to varying degrees by the proposed development:

The City Centre

10.31 This is a large and diverse zone, broadly characterised by a dense, urban fabric consisting of mainly large scale buildings and comprising a wide range of activities and land uses, predominantly commercial, retail and leisure but also incorporating an increasing amount of residential accommodation over the last decade.

Northern Quarter

10.32 The Northern Quarter is a section of the city centre with a very distinctive character. It comprises a high concentration of the more specialist and independent retail in the city centre, as well as being the heartland of the city's wholesale textile outlets. In recent years a large number of buildings have been refurbished as apartments or workspace, creating an increasingly mixed community.

Piccadilly

10.33 The Piccadilly area is focussed around Manchester's recently modernised main railway station and the Rochdale and Ashton canal basin. It has historically been an area dominated by small manufacturing, warehousing and distribution, associated with the transport network. However, the regeneration process of the last decade has begun to transform the area and its northern fringes are now undergoing extensive redevelopment as a mixed use community with a predominantly residential character, but incorporating elements of retail, commercial and leisure space.

Great Ancoats Street Corridor

10.34 Great Ancoats Street itself, as part of the Manchester 'Inner Relief Road' forms a linear corridor with a distinctive character which, although not consistent along its length, deserves to be considered separately from the adjacent areas. It is characterised primarily by the wide road corridor itself, and by the predominant commercial and retail activity of the buildings that front onto the street. The scale and quality of the iconic Express Building reflects the prestige once enjoyed by the street, although much of the more recent development along the corridor is typified by low quality, low rise retail and distribution outlets, many of which are set back from the road with large parking areas dominating the street frontage. This has led to a deterioration of the character and quality of this corridor which the long term regeneration strategy for this part of the city seeks to reverse.

Peripheral Residential Zones

10.35 Ardwick/Beswick - A large area to the south and east of the city centre, characterised by fragmented and generally low density residential areas, often with significant levels of deprivation, and broken up by pockets of industrial development and residual open space. The residential areas consist of a wide range of types and ages of housing ranging from surviving 19th and early 20th century terraced housing, to later 20th century blocks of flats.

10.36 Miles Platting - A residential area to the east of Ancoats, closely associated with the industrial activities of the neighbouring areas, built mainly in the 1960's and 70's following a programme of slum clearance that saw most of the 19th century terraced housing demolished and replaced. The area is generally characterised by two storey, terraced and semi-detached housing, interspersed with a number of large tower blocks.

10.37 Collyhurst - The area between the Oldham Road and Rochdale Road corridors to the north of the city centre, and the parallel strip between Rochdale Road and the River Irk Valley and railway corridor, is another area undergoing a substantial change in character as part of a long term regeneration programme. Historically, the area has consisted of a mixture of industrial and low rise residential areas, but current redevelopment is shifting the balance towards a denser, more contemporary urban residential character. The new apartments currently coexist with sites under development, surviving industrial buildings and older, smaller scale residential areas.

Ancoats

10.38 The character area corresponds to the Conservation Area boundary. The area consists of a grid of narrow streets, dominated by large scale industrial buildings, dating back to the late 18th and 19th centuries. These impressive mill buildings vary from 6 to 9 storeys. The area is currently undergoing extensive redevelopment, including the complete refurbishment and restoration of many of the historic mills, and the replacement of some of the more recent, lower quality buildings with new office and apartment blocks. The area is already on course to becoming a thriving, mixed use, urban village style community with a high proportion of residential occupation as well as offices, workshops and leisure developments.

New Islington & Eastlands

10.39 This character zone comprises the main East Manchester regeneration areas, of which the current development forms a strategic part. The New Islington area has been completely cleared, except for the Ancoats Hospital, which is to be restored as part of the implementation of a new Urban Village area under a masterplan developed by Alsop Architects. The future character of the area is difficult to predict but the masterplan proposes an area of diverse and iconic buildings, focussed on a new central water body which is intended to link the two existing canals. The main buildings will be on a similar scale to the adjacent Ancoats area, between 6 and 10 storeys, and will consist of a similar mix of residential accommodation, combined with retail, leisure and commercial uses.

10.40 The Ashton Canal corridor east from Great Ancoats Street is, similarly, subject to proposals for extensive future redevelopment. Much of the area is currently derelict and parts have been completely cleared. The future character of this part of the Eastlands area is less predictable, but it is likely that residential accommodation will be the predominant land use and that the buildings will be of a similar scale to the current proposals for New Islington, in keeping with the industrial structures which have historically dominated the area.

Universities

10.41 The Universities area to the west of the city centre is characterised by the dominance of large scale blocks varying in period from the 19th century buildings of the inner UMIST campus and Victoria University core campus, to the distinctive modernist architecture of the UMIST outer campus. These comprise mainly academic and research facilities, but also numerous residential buildings providing student and staff accommodation, and associated retail and leisure activities.

Principal Features

10.42 Key features within the study area are highlighted to identify the relationship of the proposals to the existing townscape and the extent of potential impacts on specific elements within the broad character areas. The main features of significance are outlined below.

Built Features

10.43 Within the wider study area there are a number of tall buildings which stand out as landmarks within the townscape of the city centre. The most significant of these are marked on Figure 02 at Appendix 10.2 and include:

- Piccadilly One, Ducie Street;
- The Sunley Tower, overlooking Piccadilly Gardens;
- The Arndale Tower, Market Street;
- The CIS Tower, Miller Street;
- The Moffat building, UMIST campus complex;
- The Beatham Tower, Deansgate - this is under construction but on completion will be the highest building in Manchester.

10.44 In addition, the adjacent Miles Platting area contains three tall residential tower blocks of approximately 14 storeys in height, also marked on Figure 02 at Appendix 10.2.

10.45 Other prominent buildings in the vicinity of the proposed development include:

- The Express Building, to the north west of the site on Great Ancoats Street;
- Piccadilly Station and adjacent office complex;
- The recently refurbished mill buildings to the south of Pollard Street;
- The derelict Ancoats Hospital Building, soon to be restored;
- The listed Lock Keeper's Cottage (see 11.26 above).

Parks and Recreational Areas

10.46 To the south of the Ashton Canal, opposite the development site, is an area of public open space, consisting of a small paved area on the corner of Pollard Street and Great Ancoats Street, and a larger grassed area. This is a temporary public space, created as part of improvements to the main route to the Sportcity area for the Commonwealth games. The site is on the proposed Metrolink route and will be completely redeveloped as part of the future creation of the Ashton line. It is currently little used and of low inherent value except as a viewpoint to the canal corridor.

10.47 To the east, along Pollard Street, are two areas of grassed open space, providing a recreational facility for the adjacent Primary School.

10.48 Further east, on the northern side of the Ashton Canal, is another area of grassed open space, which is a recreation area for residents of the adjacent houses in this part of Miles Platting.

Linear Waterways

10.49 The Ashton and Rochdale Canal Corridors are of historic value for their role in the industrial development of Manchester but also of importance today as recreational routes, for barges, walkers and cyclists. They both provide attractive linear connections between the city centre and areas to the east.

Transportation Corridors

10.50 Great Ancoats Street forms a section of the Manchester Inner Ring Road, and an important point of transition between the city centre and peripheral areas.

10.51 The West Coast Mainline railway enters Manchester from the south east and arrives at Piccadilly Station to the south of the development site.

The Existing Site

10.52 The site is defined by Great Ancoats street to the west, Old Mill Street to the north, the Ashton Canal to the south and Vesta Street to the east. The 'Islington Branch' or canal arm, cuts through the site from north to south.

10.53 The only existing buildings on the site are a number of single storey brick sheds, with pitched roofs, on either side of the canal arm. The majority of the site is undeveloped brownfield land, comprising areas of hardstanding, mounding, grassland and regenerating scrub. The boundaries are delimited by temporary fencing and hoardings.

10.54 The site is adjacent to a stretch of the Ashton Canal and towpath, which includes a number of listed structures: a canal lock, towpath footbridge and lock keeper's cottage. These three structures form an attractive whole which is not only of heritage importance but a significant visual and recreational amenity. These are described in more detail under Chapter 9.

10.55 The site itself today is of little or no intrinsic landscape value, although it is of some limited value from an ecological perspective. It is of no recreational value in its current condition and aesthetically contributes to the overall fragmentation and deterioration of the urban grain typical of the eastern fringes of the city centre. It currently detracts from the potential appeal of the Ashton Canal corridor and, its associated listed structures (above). As a derelict site, it also contributes to a sense of insecurity along this stretch, undermining its value as a recreational corridor.

Key Visual Receptors

10.56 A survey of the site and surrounding areas carried out in October, 2004, has identified a Zone of Visual Influence, shown on Figure 02 (Appendix 10.2) of this Chapter. This is the area within which the proposed development is likely to be visible. A distinction has been made between the ZVI for the proposed Block B and the ZVI for the remainder of the development. Block B will be visible within a much wider area although only a minority of potential receptors within this area will be affected. Its height and form will establish it as a new landmark building within the city centre townscape. The main visual receptors potentially affected by the current proposals, and their degree of sensitivity, are identified below by Character Area:

Views from the city centre

10.57 The city centre character area contains a large number of tall buildings which may be affected to varying degrees by the proposed development. The majority of these buildings provide office space, although an increasing amount of residential accommodation is provided within the city centre area. The principal landmark buildings are marked on Figure 03 at Appendix 10.3 and outlined at 11.42 above. Users and residents of these buildings and the upper storeys of other large buildings within the city centre area may have views to the proposed development, although these will be limited to Block B. Current views within the city centre area are of a highly urban character and include a number of tall buildings, which form focal points and landmarks on the city skyline. These receptors are of low sensitivity.

Views from the Universities

10.58 Most of the Universities area is unlikely to be affected by the proposed development. However, the area of the UMIST campus (now part of the new University of Manchester) to the north of the Mancunian Way contains a number of tall buildings, whose users may also be affected by Block B of the proposed development. Users of the Moffat building at the eastern edge of the campus are likely to be the most affected. The majority of receptors within this area will be university students and staff using academic and administrative facilities. Similarly to views from within the city centre, the existing views from this area are panoramic and dominated by built development, punctuated by tall buildings, which form focal points and landmarks on the city skyline. These receptors are of low sensitivity.

Views from The Northern Quarter

10.59 The Northern Quarter is closer to the proposed development site than much of the city centre, but buildings within the area are generally lower. In addition, the buildings along Newton Street, marking the south eastern edge of the area, are of a larger scale than the rest of the area and will block views to the site for most potential receptors. It is unlikely that most residents or users of properties in the area will be affected by the proposed development, except a minority of those in the upper storeys of the southernmost buildings, for whom, similarly to above, Block B may become a new landmark building within what is already an urban roofscape, punctuated by a number of tall buildings of diverse character and age. These receptors are of low sensitivity.

Views from the Peripheral Residential Areas

10.60 Residents and users of properties in the Ardwick/Beswick area to the south and east of the site are unlikely to be affected by the proposed development.

10.61 Residents and users of properties in Collyhurst regeneration area to the north west of the site are unlikely to be affected by the proposed development.

10.62 Residents and users of properties in Miles Platting, to the north of the site may be affected to varying degrees by the proposed development. At present, the New Islington development site, which separates this area from the proposed development site, is cleared and residents of properties on the southern edge of the Miles Platting area have clear views to the site.

10.63 The existing views for these receptors are dominated by the hoardings, temporary car parking and cleared brownfield of the New Islington area. The most prominent features in these views are the rear of the Central Retail Park and the impressive restored mills and chimneys along the southern side of Pollard Street. These receptors are of high sensitivity but existing views are of poor quality.

Views from the Ancoats Conservation Area

10.64 Residents and users of properties on the south-western edge of Ancoats, overlooking the Rochdale Canal, currently have views across the cleared New Islington development area. The Central Retail Park blocks views to most of the site from this viewpoint, but would not screen buildings of the height proposed. However, impacts would be limited to receptors along this edge, as these buildings themselves block views for potential receptors in the rest of the character area.

10.65 Similarly to above, the views for these receptors are currently dominated by the hoardings, temporary car parking and cleared brownfield of the New Islington area, with the Central Retail Park and the restored Pollard Street mills as a backdrop. These receptors are of high sensitivity but existing views are of poor quality.

Views from the Piccadilly Area

10.66 Much of this character area is within the potential Zone of Visual Influence due to the proximity of this area to the development site. However, there are significant differences between probable visual impacts on different receptors within the area.

10.67 Users of industrial areas to the south of Piccadilly Station and the railway are unlikely to have significant views to the development as the raised railway and station buildings provide a partial screen. Similarly, the mainly industrial and warehouse buildings between the Station and Great Ancoats Street will be relatively unaffected due to the topography of the area, which falls gradually away from the site, and the relative absence of high buildings or upper storey windows providing views. The areas opposite the Central Retail Park and to the north of the Piccadilly Basin are similarly industrial in character and views for users of these buildings are largely screened by intervening buildings. Receptors in all these areas are of low sensitivity and existing views are few and of poor quality.

10.68 The Piccadilly Basin area is currently under development. Most of the site around the Rochdale Canal has been cleared awaiting construction and one building is nearing completion although currently unoccupied. This is considered below under the Future Baseline.

10.69 The most sensitive receptors within the Piccadilly Area are residents of Piccadilly Village, a recent development of apartment blocks, three to five storeys high, on either side of the Ashton Canal.

10.70 Users of the Ashton Canal corridor itself, will have significant views of the proposed development. The canal stays level and is elevated above the falling ground to the west on a viaduct. These receptors are of high sensitivity and existing views, channelled within the canal corridor are of moderate quality.

10.71 Similarly, users and staff of Piccadilly Station, and passengers on trains arriving at or leaving from the station, will have views to the proposed development. These are mainly transient receptors of a low sensitivity.

Views from the New Islington and Eastlands Character Area

10.72 Large parts of this area on either side of the Ashton canal itself to the east of the site, as previously described, are derelict or cleared in preparation for anticipated redevelopment. Views to the site from much of this area are therefore open and unhindered. However, receptors are mainly limited to construction workers, drivers using the roads and car parks, and pedestrians. These receptors are of low sensitivity and existing views are of poor quality.

10.73 From Carruthers Street, the ground slopes away to the east towards the Sportcity area and there are no views back to the site.

10.74 Users of the Ashton Canal corridor, a Strategic Recreational Route and important historic feature are among the most sensitive receptors within this character area. Views of the site along the section immediately adjacent are open and significant, but views from areas to the east are increasingly channelled by the linear corridor and limited to the southernmost edge of the site. This stretch of the canal is currently dominated by the remaining structures of the old mills and factories which have largely been demolished.

10.75 Other potentially sensitive receptors are users and occupants of the buildings and spaces to the south of Pollard Street. The large converted mills and chimney are the most impressive structures in this area and users of these buildings have panoramic views across the site to Ancoats. These views are currently dominated by the derelict and partly demolished buildings within the canal corridor, the Central Retail Park and the cleared New Islington site.

10.76 Further east along Pollard Street are two small recreation areas for the pupils of the adjacent Corpus Christi and St Anne's Primary School. Views to the site are mainly screened by intervening structures and buildings. The sensitivity of these potential receptors is high but the existing views are of poor quality.

Views from the Great Ancoats Street Corridor

10.77 There are views to the site from most points along Great Ancoats Street and the properties on either side up to the Ancoats area. The site currently has very little prominence in these views due to the absence of development. Existing views south along this important road corridor are currently dominated by the road itself and heavy traffic along it. The road frontages on both sides consist mainly of parking areas and forecourts, fronting very poor quality built development. The quality of views is therefore very low. The main receptors are:

- vehicular users of the road and car parks;
- shoppers in the Central Retail Park and other retail outlets;
- pedestrians and cyclists;
- employees of the commercial, retail and industrial companies that trade along the road corridor.

Future Baseline

10.78 As described previously, large parts of the existing site context are currently subject to long term regeneration programmes which are anticipated to substantially alter the character of the areas concerned. The main areas are highlighted on Figure 04 at Appendix 10.4 and the current situation is outlined below.

10.79 Piccadilly Basin - this area is a large site of strategic importance, which has been cleared and on which development is already underway. A large new contemporary residential block, of approximately 6 storeys in height, is complete and further developments are anticipated. The majority of the anticipated development will be residential in character, but there will also be important elements of retail and commercial space towards the Great Ancoats Street corridor. The historic Rochdale Canal basin is at the heart of the development.

10.80 New Islington - A masterplan has been prepared by Alsop Architects which has been adopted by the Manchester City Council and will form the basis for the future development of this area. It has been cleared in preparation for redevelopment and some preliminary work has taken place. The masterplan envisages a dense, mixed community, housed in striking, contemporary buildings, between approximately 6 and 9 storeys in height, focussed around a central water feature which will link the two canals. The area will be predominantly residential but aims to establish a sustainable community, and will incorporate a diverse range of community facilities, leisure opportunities, work/live units and retail outlets.

10.81 Business Park - An area to the south of the Pollard Street mills, and behind the retail units on Great Ancoats Street, is currently under construction as part of the development of a new business park.

10.82 Metrolink - The area between the Ashton Canal and Pollard Street is reserved for the new Metrolink tram line to Sportcity and Ashton. The financial viability of this line is currently the subject of political debate but it forms a central part of the City Council's regeneration strategy for East Manchester and there is considerable local determination to complete the project.

10.83 Overall, the picture is of an area in a state of transition between its industrial past and a future which is likely to be based on new urban residential communities, mixed with leisure, workspace and retail outlets. The current site context, therefore, cannot be considered as a permanent state. The existing urban context is a highly fragmented and degraded landscape which has a high capacity to accommodate change and few sensitive receptors. The future baseline is difficult to predict with certainty, but within the next decade the area seems likely to become a highly built up, densely occupied, urban district, in which contemporary and possibly experimental architecture will enjoy a prominent position. Building heights will be of a scale similar to that of Ancoats, although styles and materials may contrast considerably with the surrounding Victorian mills.

10.84 In this context, the visual impact of the proposed Islington Wharf development will be considerably reduced. The visual envelope will be a much narrower one and the architectural massing will be consistent with its surroundings. The proposed development should therefore be seen as one of a number of current proposals which aim to establish a momentum towards a positive transformation of the whole area.

Description of the Project

10.85 The proposed development is described in detail in Chapter 3. Two options are currently anticipated, the second of which includes a hotel. Although the overall arrangement of the two options is similar, there are alterations in the height of two of the blocks, which will slightly alter the visual impacts for some receptors. The most significant elements for this landscape and visual assessment are summarised below.

10.86 The main body of the site is the area between the Islington Branch of the canal and Great Ancoats Street. Four blocks, A – D, are proposed here, of heights varying between 7 and 18 storeys, surrounding a communal courtyard, built over a central, underground parking area. A fifth block is proposed to the east of the canal arm which will be 11 or 12 storeys in height.

10.87 Block B is a 21 storey building, whose architecture represents a shard of the underlying sandstone substrate of the site, jutting jaggedly up into the sky. This is intended as an iconic building which will form a new focal point on the Manchester skyline, and in particular, a landmark along Great Ancoats Street and the Ashton Canal corridor.

10.88 The scheme will provide mainly residential accommodation, although some retail and leisure opportunities are provided at ground floor level in blocks A, B, D and E. Option II incorporates a hotel into Block D.

10.89 The central courtyard will provide a mixture of high quality communal space and private gardens. Two new high quality public spaces will be created along the Ashton Canal, at the corner with Great Ancoats Street and at the junction with the Islington Branch. That on the Great Ancoats Street corner will be a more dynamic, hard surfaced space, interacting with the ground floor level activity of Block B, while that at the corner of the canal arm will be a quieter space for relaxation, and a stopping point along the canal towpath.

10.90 The construction of the development will be carried out in three phases over several years.

- Phase 1: Blocks A and B;
- Phase 2: Blocks C and D;
- Phase 3: Block E.

10.91 Construction is likely to involve the following principal elements:

- Demolition and removal of existing structures and hard standing from site, including of the brick building attached to the listed Lock Keeper's cottage, involving the use of heavy breaking equipment and the temporary accumulation of large piles of rubble on site;
- Erection of temporary accommodation and storage compounds during the construction process;

- Construction of temporary road to allow movement of equipment around the site;
- Use of heavy machinery such as pile drivers and excavators in the preparation of foundations;
- Large plant such as tower cranes, active on site during the erection of multi storey buildings;
- Accumulation of large amounts of construction material at certain periods of time; and
- Movement of heavy goods vehicles and machinery to and from the site, along existing local roads, as well as within the site itself.

Results of Analysis - Assessment of Visual Impacts

10.92 For the sake of clarity and concision, visual effects are summarised and assessed for both Construction and Operational Phases under individual receptors. These are grouped by character and presented in order of sensitivity. Where there is a significant difference between the visual impacts of Options I and II, these are highlighted and assessed. Figure 9 at Appendix 10.9a-9c provides outline visualisations of the impact of the proposed development on existing views from key locations.

The City Centre

10.93 As shown in Figure 03 (Appendix 10.3), only Block B would be visible to receptors within the city centre character area and views would be limited to receptors in the upper storeys of some of the taller buildings. Some of the most distinctive tall buildings have been highlighted on Figure 03, but it is likely that occupants of a much wider range of buildings within the City Centre will have views to the proposed development. These are likely to consist largely of residents of properties, guests of hotels and the staff of organisations based in these buildings. Given the urban character of the existing view and the number of tall buildings included within views of the City Centre roofscape, the addition of a new 'landmark' would not represent a significant change. Given the high quality and distinctive character of the proposed architecture, in the context of a contemporary and rapidly transforming urban centre, this could be seen as a beneficial change. During Construction of Block B in Phase 1, the impact of high cranes and potential illumination may be slightly more significant but this will be temporary. Visual impacts for all categories of receptors within the City Centre area will be Minor both during the Operational and Construction Phases.

Northern Quarter

10.94 Similarly to the above, only Block B would be visible to receptors within the Northern Quarter character area and views would be limited to a very few receptors in the upper storeys of some of the taller buildings. Since the average height of buildings in the area is significantly lower than for the rest of the city centre, and the area contains no major tall buildings, such views will be far more limited than in the city centre. In addition, since some of the tallest buildings within the area are located along its southern edge, it is probable that views will be restricted by and large to the occupants of the upper storeys of these buildings, which include a combination of residents as well as staff of companies located in these buildings. During Construction of Block B in Phase 1, the impact of high cranes and potential illumination may be slightly more significant but this will be temporary. Visual impacts for all categories of receptors within the Northern Quarter area will be Minor both during the Operational and Construction Phases.

Peripheral Residential Zones

10.95 Ardwick/Beswick - This area is not considered to be within the ZVI. The proposed development will have no significant impact on receptors within this area.

10.96 Miles Platting - Under the current baseline conditions, residents of properties in the western part of this character area will have views of the proposed development across the cleared New Islington site. Those along the western edge of the area will have views to Blocks B, C, D and E. A much larger number of residents will have views to Block B alone. The residents of the three tower blocks, in properties above the first floor, will all have views to the entire development. The sensitivity of these receptors is high but the existing view is of very poor quality, as described above. The effect of the proposed development on the views of these residents is significant but may be qualified as Moderate/Beneficial during the Operational Phase. The impact on views for these receptors will be slightly greater under Option II as Blocks D and E will be higher than for Option I. However, the assessment of impacts for this option remains as Moderate/Beneficial. During all three Construction Phases, impacts on these receptors will also be significant, as the final phase is the construction of Block E, on the eastern edge of the site. The impacts of construction activities as described above, in particular when illumination is required on winter mornings and evenings, will be Moderate/Adverse.

10.97 Collyhurst - This area is not considered to be within the ZVI. The proposed development will have no significant impact on receptors within this area.

Piccadilly

10.98 The most sensitive receptors within this character area are the residents of properties in Piccadilly Village, which is directly opposite the proposed development site. The streets and public spaces within this residential area and alongside it afford direct views to the proposed development (See Figure 09a at Appendix 10.9a). The majority of the dwellings within this area are, however, oriented north-south towards the canal corridor or parallel streets, and views east to the proposed development site are, therefore, mainly oblique. The residents closest to Great Ancoats Street are likely to have the most significant views, while the falling topography and intervening buildings limit views to the site from properties further to the west. Impacts will also be greater for residents of properties in the upper storeys. The existing views to the site are, however, very poor, and dominated by large advertising hoardings which form the site boundary along Great Ancoats Street. The aspects of the development which will have the most significant impact are Blocks A and D.

10.99 The proximity of the site and scale of the proposed buildings along this edge, will undoubtedly have a very significant visual impact on these receptors. This will be greater for Option II, as Block D will be a storey higher at this end. However, given the high quality of the proposals for Block A, the changes will be beneficial in terms not only of visual amenity but also of the re-urbanisation of this area, bringing greater security and vibrancy. The proposals for additional public spaces and amenities at ground level also represent a potential enhancement.

10.100 On balance, the visual impact of the development on residents within this area will be Major/Beneficial. Given their proximity to the site, the impacts for these receptors during the first and second Construction Phases (Blocks A, B, C and D) will however be Major/Adverse, though clearly this will be for a limited time only during construction.

10.101 Another sensitive receptor group for whom the proposed development will have significant impacts are the users of the Ashton Canal 'Strategic Recreational Corridor'. These receptors will have clear views to the majority of the proposed development from the towpath, and in particular from the aqueduct to the west of Piccadilly Village. Existing views from the canal are across Piccadilly Village and the only features of the development site which are visible are the advertising hoardings on Ancoats Street. The proposed development will substantially alter the character of the views to the east, although the greater distance and intervening buildings will reduce the potential impact. The quality of the architectural proposals will ensure that the change is a beneficial one. The impacts of the proposals for these receptors will be Moderate/Beneficial during the Operational Phase for both options. During the first and second Construction Phases the impacts will be Moderate/Adverse, though clearly this will be for a limited time only during construction.

10.102 The majority of remaining receptors within this character area are within the ZVI for Block B, but outside the ZVI for the rest of the development. Despite the relative proximity of many of these potential receptors, there are a number of factors which substantially limit the visual impacts of the proposed development. These include:

- The nature of many of the industrial buildings, which are mainly one or two storeys, with few windows and often oriented towards a central or rear service yard;
- A number of unoccupied or semi occupied larger buildings;
- The topography, which falls to the south west and limits views to the site;
- The screening effect of buildings along the Great Ancoats Street corridor.

10.103 Those receptors within this less affected part of the character area, who may be affected by the proposed development may include:

- motorists, cyclists and pedestrians using the streets;
- employees and clients/suppliers of businesses within the area;
- A small but growing number of residents of apartments within the area.

10.104 Due to the lesser sensitivity of the majority of these receptors, the increasing distance from the site, and the partial screening effect of intervening buildings, the visual impacts of the proposed development on these receptors will be Minor for both Construction and Operational Phases.

Great Ancoats Street Corridor

10.105 The effects of the proposed development on the views of receptors within this linear character area will be very significant. The principal receptor groups affected are, in order of sensitivity:

- employees of the retail, commercial and manufacturing businesses that occupy the majority of premises along this corridor;
- customers and suppliers of these businesses; and
- motorists, cyclists and pedestrians using this Strategic Road Corridor.

10.106 The impacts of the development will be greatest in the areas closest to the Islington Wharf site and decrease progressively to the north and south. Blocks A and D will have the most significant effect on views for these receptors due to their proximity to the road. Block B will also become a new landmark and focal point along the road. However, the visual and environmental quality of the Great Ancoats Street corridor is currently very poor, especially south of the Ancoats Conservation Area, due to the fragmentation and dereliction of many sites, and the poor standard of the majority of existing development. The scale of the development will represent a very considerable transformation in the character and quality of this part of the road corridor, but will begin the process of reurbanisation and environmental enhancements to which the regeneration of the area aspires, and which was previously characteristic of this edge of the town centre in its industrial heyday.

10.107 The visual impacts of the proposed development on the moderately sensitive receptor groups within this character area will be Major/Beneficial during the Operational Phase for both Options I and II. The prominence of Block D will be greater under Option II, as the proposed hotel will be located at the western end of this block, but in articulating the corner condition and strategic location of this part of the development more clearly, this may be seen from a visual and urban design perspective as the preferred option.

10.108 The visual impacts of the Construction Phase for these receptor groups, due to their proximity to the site, will be significant. However, within the context of a noisy, heavily trafficked road corridor, with a substantial amount of construction activity already taking place, the impacts of the proposed development during this phase, on these receptors of moderate and low sensitivity, will be Minor/Adverse, though clearly this will be for a limited time only during construction.

Ancoats

10.109 The occupants of buildings along Redhill Street on the southern boundary of the Ancoats Conservation Area will have clear views to the proposed development across the cleared New Islington site. The users of the Rochdale Canal and towpath, a Major Recreational Route, would also have similar views although from a lower viewpoint which is partially or completely screened for most of its length. These buildings will screen the proposed development from the view of most other occupants of the Ancoats area. The receptors will include a broad mixture of employees of commercial premises and residents of properties along this road. Although partially screened by the Central Retail Park, the development will be clearly visible for most occupants of these buildings, although distance will reduce its impact to a degree. The view will change progressively over the three phases of development as Block E, the closest to these receptors, will be constructed in Phase 3. However, the existing view is of very poor quality, consisting primarily of derelict and cleared land, prepared for development and surrounded by hoardings. The most attractive features are the Pollard Street mills in the background. For receptors at the western end, near Great Ancoats Street, the existing views of these features will be blocked, but these are already substantially screened by the Central Retail Park. Under these circumstances the proposals do not represent a significant impact, either adverse or beneficial. The impacts of the proposals for these sensitive receptors will therefore be Minor during the Operational Phase. These receptors will also have clear views of the construction activities during each of the three phases, but again, the distance will reduce the impacts of these activities. The visual impacts of the Construction Phase will therefore be Moderate/Adverse, though clearly this will be for a limited time only during construction.

10.110 The impacts of Option II for these receptors will be significantly greater than for Option I, as Blocks D and E would both increase in height. The Impacts of Option II during the Operational Phase will therefore be Moderate. The visual impacts of this Option during the Construction Phase would be the same as for Option I.

New Islington & Eastlands

10.111 As previously highlighted, this character area contains very few potential receptors. The most significant visual impacts of the proposals within this area will be for the occupants of the Mill buildings along Pollard Street. Those with views to the north will have clear views to the proposed development from a short distance. These receptors include office workers and employees of light manufacturing and distribution firms whose sensitivity is moderate. The existing views are of very poor quality, consisting mainly of derelict and cleared land, and dominated to the west by the Central Retail Park. The existing low brick buildings on the site also detract from the potential appeal of the listed lock, bridge and lock keeper's cottage. In this context, the removal of the existing poor quality buildings and their replacement by a distinctive, high quality development will represent a substantial improvement. The visual impacts for these receptors during the Operational Phase is Moderate/Beneficial for both options. Given their proximity to the site, the impacts for these receptors during the Construction Phases will however be Major/Adverse, though clearly this will be for a limited time only during construction.

10.112 The only other receptor group within this character area for whom the proposals represent a significant potential visual impact are the users of the Ashton Canal Strategic Recreational Corridor. From the majority of locations along the canal, views are channelled by walls and buildings on either side. The principal impact of the proposed development will be Block B. A building of the high quality and distinctive character proposed will, however, become a major new landmark on the canal route, and a symbol of the regeneration of the surrounding area.

10.113 From the stretch of canal adjacent to the site, the full development will be visible and will represent a dramatic transformation of the site. However, the impacts will be largely beneficial for a number of reasons:

- The proposed development is to the north of the canal, ensuring that it will not shade this stretch;
- The proposals include substantial improvements to the quality of open space along the canal towpath;
- The proposals include the demolition of the poor quality buildings which currently detract from the character and appeal of the listed historic features;
- The development will bring new life and activity to this stretch of the canal, thereby creating an enhanced sense of security.

10.114 Overall, the visual impacts of the proposed development for these receptors will be Major/Beneficial during the Operational Phase for both Options. Conversely, during the Construction Phase, due to the scale and very close proximity of the construction activities the impacts will be Major/Adverse, though clearly this will be for a limited time only during construction.

Universities

10.115 As highlighted above, the only potential receptors within this character area are the occupants and users of the Moffat Building, at the eastern edge of the UMIST campus (now University of Manchester). The users of the upper storeys of this tower are likely to have views to Block B of the proposed development. These include primarily students and university staff. The distance to the development and the scale of intervening buildings will minimise the impact of the proposals and Block B will become a new and distinctive landmark within the city's roofscape. Impacts for these receptors will be Minor/Beneficial during the Operational Phase and Minor/Adverse during the first Construction Phase only.

Assessment against Future Baseline

10.116 As described above, the proposed development is situated within an area undergoing a significant transformation. Although preparations are well underway, the exact form and character which this will eventually take is not clear. This assessment therefore, aims only to indicate the more predictable, general effects of the wider regeneration proposals on the impacts of the Islington Wharf development.

10.117 Anticipated developments will include a far greater number of sensitive receptors, the principal groups of which will be:

- occupants and owners of residential properties;
- users of leisure facilities and recreational routes; and
- staff of service, leisure and retail industries.

10.118 However, the scale and density of current proposals for the main development sites, at New Islington and Piccadilly Basin, will also screen the current proposals from a number of existing receptors, in particular those within the Ancoats and Miles Platting character areas.

10.119 Future Phases of the Islington Wharf development may be implemented in the context of a more densely populated and diverse community. Construction activities may, therefore, have a more significant impact than currently anticipated on a greater number of receptors in closer proximity to the site.

10.120 In the longer term, however, the progress of the anticipated regeneration programme will place the Islington Wharf development within the context of a wider area of new buildings on a similar scale and of a similar contemporary character. As these new areas take shape, the Islington Wharf development will no longer be a unique and isolated site but be assimilated into a new urban district, whose aim is to set new standards for the quality and sustainability of the architecture and public realm in central Manchester. Block B of Islington Wharf may remain a landmark within this wider context but the impacts of the development as a whole will be substantially reduced.

Proposed Mitigation

10.121 Given the scale of the proposed development and its location, there are few opportunities for additional mitigation during the Operational Phase of the development, or the requirement to do so due to the design of the proposals. As described above the proposals are for a large development which explicitly aims to become a new landmark within central Manchester, particularly when viewed from the Great Ancoats Street and Ashton Canal corridors. The balance of adverse or beneficial impacts of such a scheme depends on the detail of the architectural proposals.

10.122 The detailed proposals for Phase 1 represent a recognition that the prominent location of the site and scale of the development requires a very high quality of design and implementation. The scale and detailing of Block B, 'the Shard' promise a bold and exciting new architectural statement which will become a recognisable landmark for the East Manchester area. Its stepped form ensures that its height will not be overbearing and the use of contrasting materials will also break up and articulate the elevation, and reduce its potential visual mass. It will be important to ensure that this attention to detail and high quality is maintained throughout the three phases of the development, especially in the treatment of the western corner of Block D. This junction with Old Mill Street will act as the visual 'prow' of the development in views from the north and its articulation is of vital importance to the overall success of the final scheme.

10.123 The quality of the public realm proposals will not in any significant sense 'mitigate' the impacts of the built form. However, the treatment of the public realm will play an important role in providing attractive and functional spaces for leisure and recreation both within and alongside the development, and in the integration of the architectural proposals into the urban context. There are a number of key considerations which are important in this aspect of the scheme, including:

- Minimisation of shading along the Islington Branch canal arm to promote the conservation of the communities of protected species within parts of this section of the canal (see Chapter 16 Ecology);
- Provision of attractive and functional spaces along the Ashton Canal towpath which reinforce the character and quality of this strategic route and respect its listed features such as locks, towpath footbridge and lock keepers cottage;
- The use of native species along the canal corridor, to avoid negative impacts on the habitat of the SBI (see Chapter 16 Ecology);
- Suitable features for nesting and feeding for black redstarts (See Chapter 16 Ecology);
- The provision of a high quality streetscape along Old Mill Street, which will be the main gateway into the New Islington area;
- Careful consideration of the temporary treatment of areas for development under Phases 2 and 3 (see below);

- In general, the use of high quality materials, attention to detail and consistency with the architectural palette.

10.124 As described above, the principal adverse visual impacts are during the Construction Phases, which are time limited. On such an open site, mitigation is also problematic. Principal measures to reduce the visual impacts of the construction process will include:

- High and attractively designed hoardings along the site boundary to screen activity at ground level from nearby residents and passers by;
- Protection of the Ashton Canal towpath to maintain access during the construction period and minimise the impact of construction activity on users;
- Scheme to be agreed to avoid contamination of the canal and canal arm by construction materials and waste;
- The site compound should be located away from Great Ancoats Street, towards the rear of the site;
- Treatment of areas to be constructed in subsequent phases should be considered and, where a significant time is likely to elapse between the phases, a temporary landscape treatment should be implemented; and
- Construction of Phases 2 and 3 should be carefully considered to minimize the adverse impacts of these activities on residents and users of Blocks A and B, in particular access for construction traffic should be separated from residential access, hoardings should be erected to hide construction activities and dust, and construction activity should be restricted to daytime hours and weekdays, with consideration given to means of minimising site illumination where work is carried out during hours of darkness.

10.125 These issues can all be addressed through appropriate planning conditions.

Conclusion and Residual Impacts

10.126 As described previously, the proposed development will provide a landmark development and a gateway to the East Manchester area. In due course it will be set within a completely transformed urban panorama of large scale, mixed use buildings, between 6 and 12 storeys in height and of very varied character.

10.127 In the near future the canal and towpath will become a well-used and important recreational corridor and the public spaces associated with the Islington Wharf development will provide a major node and point of access within the wider network of pedestrian routes linking the city centre to the Eastern suburbs. Block B will have become a new focal point on the Manchester skyline and another identifiable symbol of the city's renaissance.

10.128 The residual landscape impact associated with the proposal will be Major/Beneficial.

10.129 The residual visual impact for all receptors described above will be beneficial, although the degree will vary from Minor to Major.

Summary of Impacts

10.130 The potential impacts, proposed mitigation and residual impact are summarised in the following table, Figure 10.1:

Figure 10.1: Summary of Impacts - Visual Assessment

Character Zone	Key Receptors	OPTION A		OPTION B		Mitigation	Residual
	Sensitivity (H,M,L)	**Construction**	**Operation**	**Construction**	**Operation**		
City Centre	Residents (H)	Minor	Minor	Minor	Minor	The absence of adverse visual impacts is based on the assumption of high quality architectural proposals throughout the three phases of the scheme. Mitigation measures for adverse visual impacts during the Construction Stage include: • Well designed hoardings • Protection of towpath • Location of compound away from main thoroughfares • Temporary landscape	Residual impacts will be conditioned by the degree of further development currently envisaged for all the surrounding areas. The scale and character of these developments as currently proposed will reduce the impact of the Islington Wharf development over time. The principle residual impact will be that of Block B, 'the Shard', which will remain a landmark on the Manchester skyline and a visual point of reference at this gateway to the East from the town centre.
	Office workers (M)	Minor	Minor	Minor	Minor		
Northern Quarter	Residents (H)	Minor	Minor	Minor	Minor		
	Office workers (M)	Minor	Minor	Minor	Minor		
Miles Platting	Residents (H)	Moderate/ Adverse	Moderate/ Beneficial	Moderate/ Adverse	Moderate/ Beneficial		
Piccadilly	Residents in Piccadilly Village(H)	**Major/ Adverse**	**Major/ Beneficial**	**Major/ Adverse**	**Major/ Beneficial**		
	Users of Ashton Canal Corridor (H)	Moderate/ Adverse	Moderate/ Beneficial	Moderate/ Adverse	Moderate/ Beneficial		
	Other receptors (L)	Minor	Minor	Minor	Minor		

						treatment between phases • Separation of construction traffic.	
Great Ancoats St.	Employees (M)	Minor	**Major/ Beneficial**	Minor	**Major/ Beneficial**		
	Other receptors (L)	Moderate	Minor	Moderate	Minor		
Ancoats	Residents of Redhill St (H)	Moderate/ Adverse	Minor	Moderate/ Adverse	Minor		
	Users of Rochdale Canal Corridor (H)	Moderate/ Adverse	Minor	Moderate/ Adverse	Moderate		
New Islington & Eastlands	Office Workers in Pollard St Mills (M)	Moderate/ Adverse	Moderate/ Beneficial	Moderate/ Adverse	Moderate/ Beneficial		
	Users of Ashton Canal Corridor (H)	**Major/ Adverse**	**Major/ Beneficial**	**Major/ Adverse**	**Major/ Beneficial**		
Universities	Staff and students in Moffatt Building (M)	Minor	Minor	Minor	Minor		

11. Socio-Economic Assessment

Introduction

11.1 An assessment of the socio-economic effects of the proposed development has been undertaken by Quality Economic and Social Research (QESR), an independent consultancy specialising in local area economic analysis and labour market research and is presented in this chapter. The key socio-economic issues have been identified as follows:

- accordance with the Regional Economic Strategy, Regional Planning Guidance and relevant sub-regional and local economic development strategies;
- the market for residential accommodation in Manchester centre (Options I and II) and hotels (in relation to Option II) and the impact of the development on the respective current markets;
- the impact of both options for the development on the local economy and labour market;
- the potential contribution of the development in either form to local regeneration objectives, in New East Manchester.
- This assessment has been carried out for Options I and II, i.e. including or excluding the hotel. Where different conclusions apply to these options, this is indicated in the text or table as appropriate; elsewhere, the assessments made can be assumed to apply to both options.

11.2 A variety of local organisations, as set out below, have been consulted, directly or by reference to approved policy documents:

- North West Regional Assembly.
- North West RDA.
- Manchester City Council.
- New East Manchester Ltd.
- Ancoats Urban Village Company.
- Greater Manchester Police.

Terms of Reference and Policy Context

11.3 The most relevant policy documents are the strategic regional level documents, namely Regional Planning Guidance for the North West, March 2003 (RPG13) and the Regional Economic Strategy (RES) for England's Northwest, March 2003, and local planning, economic development and regeneration policy documents, including the City Pride Partnership's Economic Development Plan, Manchester City Council's Community Strategy, the adopted City Centre Strategy, Knowledge Capital Prospectus and New East Manchester Regeneration Framework. Plans for the New Islington Community and Sport City developments have also been consulted.

11.4 Relevant policies include, at the regional level:

- Recognition of Manchester City Centre 'as an economic driver within the Region, (which) will need to sustain and develop (its) general attractiveness as a place to live and work still further in order to perform its role as a Regional Pole, to act as a powerful catalyst for further regeneration of the nearby inner-city areas, to assist the urban renaissance of the North West Metropolitan Area, and to secure the prosperity of the Region'
- Reinforcing the economic potential of holiday, business and sport/recreation tourism (Option II).

...and at the local level:

- Generating economic activity through the attraction of inward and indigenous investment, focusing on priority sectors;
- Making the City Pride area recognised and respected as a major investment location;
- Securing the translation of economic activity to the benefit of the local community, especially unemployed people.

...with a vision of Manchester as:

- A major European regional; capital, a centre for investment and growth, and an international city, capable of realising its outstanding commercial, cultural and creative potential;
- An area distinguished by the quality of life and sense of well-being enjoyed by its residents, and,
- An area where all residents have the opportunity to participate, and benefit from, the investment and development of their city and therefore live in truly sustainable communities.

11.5 Priorities for Action in the Manchester City Centre Strategic Plan 2004-2007 include:

- strengthening investment opportunities within the city centre, particularly in the knowledge economy;
- 'strengthening further the range and quality of the retail, leisure and hotel offer in the city centre to remain competitive', and 'improving visitor facilities for both leisure and business visitors';
- 'further reducing crime and improving safety and security;'
- 'building on the linkages between the city centre and key adjacent areas such as Hulme, Moss Side, **Ancoats,** Miles Platting, and **East Manchester** to maximize regeneration opportunities and address local needs'.

11.6 Another key strategic direction for Manchester comes from 'Manchester Ideopolis? Developing a Knowledge Capital' (Ref. 1.33), the Work Foundation's perspective on the importance of developing Manchester as a Knowledge Capital or 'Ideopolis', for it to become an effective performer on the global stage.

11.7 This important document characterises an Ideopolis as:

- 'combining the best drivers' (in the respective local and regional economies) 'with some of the most challenging problems';
- 'led and galvanised by knowledge - by world class universities and by industries and sectors and that take their lead from them';
- 'connected' cities places that people can travel to, from and within, at great ease;
- 'diverse and inclusive places - places that possess the range of skills demanded by a modern economy', and,
- 'above all, these cities are places where people want to live, to learn, to generate and exchange ideas, and to do business.'

11.8 Much of the Knowledge Capital agenda is about innovation, enterprise building on the stock of HEI expertise and learning capacity, and increasing technology transfer. However, there are important aspects of the equation, towards which this development can contribute, including:

- Livability: attractive spaces, thriving creative and cultural life - this development will create a high quality living environment, just 500m from a key public transport interchange, and in an area which links the city centre to the deprived communities to the east;
- Connectivity: transport links, both to and within the city - the location of this development near to Piccadilly Station will encourage the use of public transport by visitors and residents alike;

- Infrastructure: the proposed development will create living spaces, and visitor accommodation (Option II) in a location adjacent to the 'HEI precinct', encouraging knowledge workers to live close to their jobs and visitors to use sustainable means of transport for their journeys to and within the city.

11.9 Relevant regeneration strategy policies are referred to in the sub-section on regeneration impacts.

Methodology

11.10 The assessment of Baseline Conditions has drawn on recent market analysis, publications produced by Manchester City Council, and generally available official statistics (notably Census 2001, Annual Business Inquiry, Labour Force Survey, Neighbourhood Statistics and the new Index of Multiple Deprivation 2004).

11.11 The demand for and supply of hotels, and residential accommodation has been assessed with reference to recent market analysis by local agencies, research reports, and publications on supply and market trends, produced by Manchester City Council.

11.12 Effects on the local economy have been assessed by estimation of aggregate employment creation effects on the target of 10,000 new jobs for New East Manchester.

11.13 The employment impacts have been assessed, as follows:

- The *direct permanent* employment generated by the proposals has been assessed using average densities quoted in the OffPAT Best Practice Advice Note No 1 (Ref 1.1).
- The *direct temporary* employment (i.e., during construction) is an estimate made on the basis of previous similar projects.
- *Indirect employment effects* include:
  - Those that arise within the supply-chain businesses that benefit from the project *(induced effects)*. As some of these suppliers will be locally based, there are expected to be indirect local employment benefits. The estimate for indirect induced employment effects is based on guidance by HM Treasury (Ref 1.3).
  - Those deriving from the increased spending in the local economy that arises from the contribution of the project to local expenditure, through the creation of net additional employment, and new residents moving into the development and generating expenditure *(income effects)*. The estimate for indirect income employment effects is based on guidance by HM Treasury (Ref 1.3) and estimates made by QESR.

- Another potential factor in estimating employment effects is *displacement from existing businesses.* In this case, it is considered that displacement effects will be negligible, as our analysis indicates rising demand for the employment generating uses.

11.14 The labour market impacts have been assessed by estimating the likely occupational composition of employment within the hotel and retail sectors and comparing this with the availability of such skills within Manchester.

11.15 The potential regeneration impacts of the proposal have been assessed in the light of baseline conditions within broadly a one-mile radius of the proposal site, and in the Eastern Gateway and New East Manchester areas more generally, as indicated by the Index of Deprivation 2004, and by reference to the baselines and objectives of relevant regeneration strategies and programmes.

11.16 The housing market impact has been assessed on the New East Manchester area, in terms of the target to build 12,500 new dwellings.

11.17 The population impacts have been assessed on the New East Manchester area, in terms of the target to double the population from 30,000 to 60,000.

11.18 Finally, consideration has been given to the issue of crime in the vicinity of the development site and the potential contribution that could be made by the proposals to ameliorate current crime levels.

Significance criteria

11.19 Where impacts can be quantified, the significance criteria for them have been assessed on the following basis:

Effects	**Economic**	**Labour market**	**Regeneration Impacts**	
Criterion	**Aggregate growth**	**Skills Balance**	**Unemployment change**	**Population / Housing Increase**
Measure(s)	**% of target of 10,000 new jobs**	**% take of jobs in major occ. groups/ lower skilled groups[3]**	**Number out of work[2]**	**% of targets: 30,000/ 12,500**
Impact area	**New East Manchester**	**New East Manchester**	**Nearest 5 Wards**	**New East Manchester**
Substantial adverse	Reduction >=2%	>=5%	Increase >=2%	Reduction >=2%
Moderate adverse	Reduction 1.0 – 1.9%	2.0-4.9%	Increase 1.0 – 1.9%	Reduction 1.0 – 1.9%
Minor adverse	Reduction 0.1- 0.9%	1.0-1.9%	Increase 0.1- 0.9%	Reduction 0.1- 0.9%

Negligible	Red < 0.1% Incr < 0.1%	<1.0% / <5%	Red < 0.1% Incr < 0.1%	Red < 0.1% Incr < 0.1%
Minor beneficial	Increase 0.1- 0.9%	5.0 – 14.9%	Reduction 0.1- 0.9%	Increase 0.1- 0.9%
Moderate beneficial	Increase 1.0 – 1.9%	15.0 – 24.9%	Reduction 1.0 – 1.9%	Increase 1.0 – 1.9%
Substantial beneficial	Increase 2%+	25.0 – 49.9%	Reduction >=2%	Increase >=2%

Notes:

1) All increase/reduction estimates based on net change due to proposed development

2) Unemployment = Claimant count

3) Adverse - % in any major occupational group; Beneficial - % in lower skills groups

11.20 The significance criteria have been assessed using the following assumptions, in keeping with the aims and objectives of approved local plans and strategies:

- *Aggregate growth in the economy* - that further economic growth towards the targets set for New East Manchester is desirable;
- *Skills balance* - that it is desirable that development proposals should offer jobs across a range of occupations, including those suited to lower skilled persons, yet should not place undue strains on particular occupational groups within the labour market, potentially creating or exacerbating any skills shortages;
- *Unemployment* - that the proposed development should create employment opportunities accessible to the unemployed - it is assumed that at least half of any lower skilled jobs can be filled by those unemployed living within a 1 mile catchment of the site. This number is then calculated as a percentage of the total unemployed claimant count.
- *Population and Housing* - that is desirable for the proposed development to contribute towards the targets for New East Manchester to build 12,500 new homes, and double the population to 60,000.

Baseline Conditions

11.21 This Chapter begins by considering the baseline conditions in the vicinity of the proposal site, beginning with an analysis of the Residential and Hotels markets in Central Manchester.

Residential Market: Summary Analysis

11.22 Manchester has reputedly the fastest growing city centre in Britain, in population terms. The City Centre Data File (Ref 1.16) estimated that its population would reach just under 15,000 by 2004, from a base in 1991 of just under 1,000. The development of the city centre housing market has been one of the great success stories of urban regeneration of the last decade, with around 11,500 new houses having been built, or presently under construction.

11.23 The principle focuses of housing development have been Salford Trinity & Riverside, Whitworth & Canal Street, Northern Quarter, Piccadilly, Deansgate and Knott Mill & Gaythorn, but new developments are now also rapidly spilling over into the inner city areas adjacent to the city centre.

11.24 The turn of the century brought a major increase in the number of schemes launched each year, increasing from 12 in 1999 to 28 schemes in 2002. The geographical spread of developments in central Manchester has extended with locations such as Ancoats, Ludgate Hill, Salford Trinity and Riverside and the Central Core, where previously there had been very limited development, all accommodating successful new schemes.

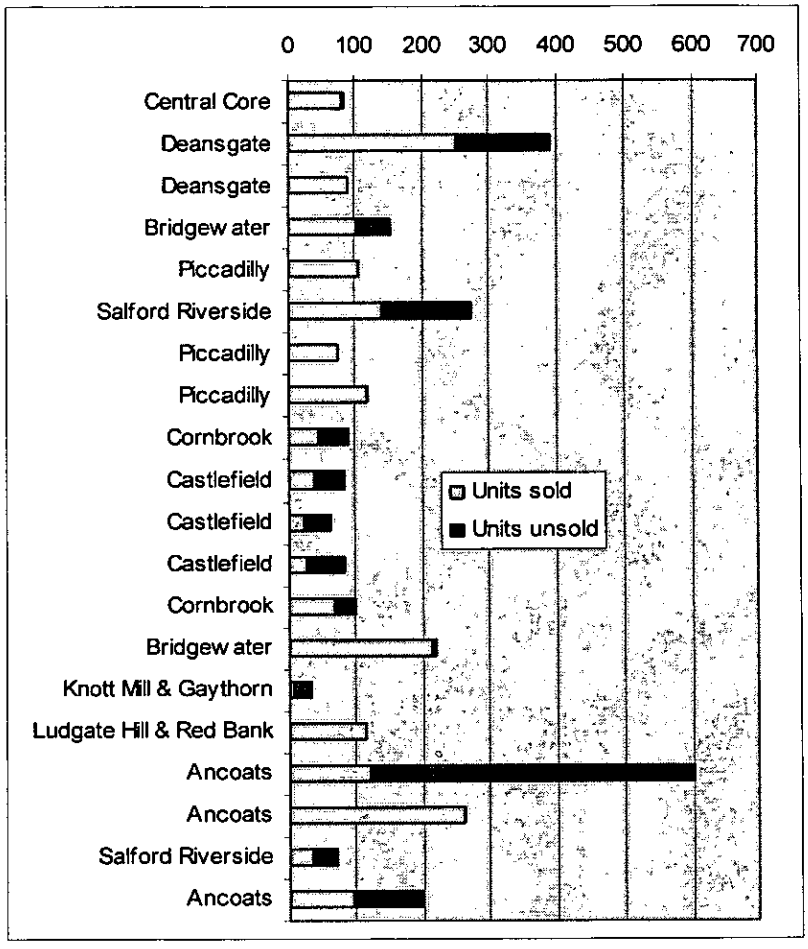
11.25 The trend towards city fringe locations reflects that many of the sites in what has been traditionally referred to as the city centre have now been fully developed, and as apartment costs have escalated, so attention has switched to more peripheral city centre locations, to the benefit of the deprived areas on the fringes which had previously suffered from a lack of developer and investment interest:

In mature city centre housing markets, such as Manchester, large scale builders have recently been finding that opportunities for development in the city centre are diminishing ... they are now beginning to develop sites within inner-urban areas whilst marketing them in such a way that they are associated with 'city centre' living. These developments tend to be located in some of the most deprived wards in the country that are close - and have good transport links into - city centres, and are designed to cater for the market for owner occupation that has been squeezed out of the city centre.

Future Of City Living, Sheffield Hallam University for ODPM, May 2004

11.26 Figure 11.1, below, lists the schemes currently on the market in broad order of launch date, and numbers of units sold and unsold. This figure shows that most schemes have been selling well, with few having units on the market for any length of time. (The units unsold in some of the larger schemes at the top indicate phasing of release dates as much as any difficulty in achieving sales.)

Figure 11.1 Units Sold and Unsold, by Area and Date of Launch



Source: DTZ Debenham Tie Leung (except last scheme: ING's website)

11.27 The continuing strong levels of demand are also reflected in healthy resale prices, with average resale prices in most sub-areas above the average launch prices for the same areas (although this is affected by the mix of types and standards on the market at any one time).

11.28 It should also be noted that some of the recently launched schemes have sold out very quickly. The most recently launched scheme near to the proposal site – ING's Royal Mills development in Ancoats, is selling well with 77% of units released having been sold or reserved already (Source: Developer's website, November 2004).

11.29 The proposal site is on the fringe of the New Islington Community (NIC) development, and located directly adjacent to the first planned phases of the NIC. These two developments will help to establish this run-down area as a desirable city centre fringe location, while the facilities planned for Old Mill Street will help create a neighbourhood centre for the newly forming communities.

Hotels Market: Summary Analysis (Option II only)

11.30 Manchester continues to benefit from a period of economic and investment growth, generating rising demand for hotel accommodation in the central area, including four and five star hotel accommodation. Key drivers of this trend have included:

- Economic growth;
- Strengthening of the business and financial services sector;
- Growing visitor numbers for tourism, sport, shopping, and business visiting.

11.31 Evidence that Manchester has been short of bedrooms in recent years comes from the continuing strong performance of hotels, despite the substantial increase in bedrooms available as new hotel developments and refurbishments have added fresh capacity. Although occupancy rates dropped marginally in 2003, according to one source, from 70.4% to 69.8%, this rate was still above the regional UK average of 68.3% (Source: HotelBenchmark Survey by Deloitte, April 2004 [Ref 1.28]).

11.32 Thus, although the general movement in occupancy rates has been in line with regional UK trends1, Manchester has nevertheless outperformed in each year. In fact, data from another trend watcher, PKF, indicates average daily room rates rising from 65.4% to 69.6% in 2003, and to 76.4% in the year up to July 2004. This compared to an average occupancy rate for UK regional hotels of 70.6%, indicating a thriving visitor rate.

11.33 The fact that occupancy rates remain high, and significantly above the regional UK average, indicates that unsatisfied demand may still exist. With the Manchester City Centre economy still one of the most rapidly growing in the northwest and nationwide, the hotels market can be expected to continue to grow steadily over the next few years.

Socio-economic and Regeneration Baseline Summary

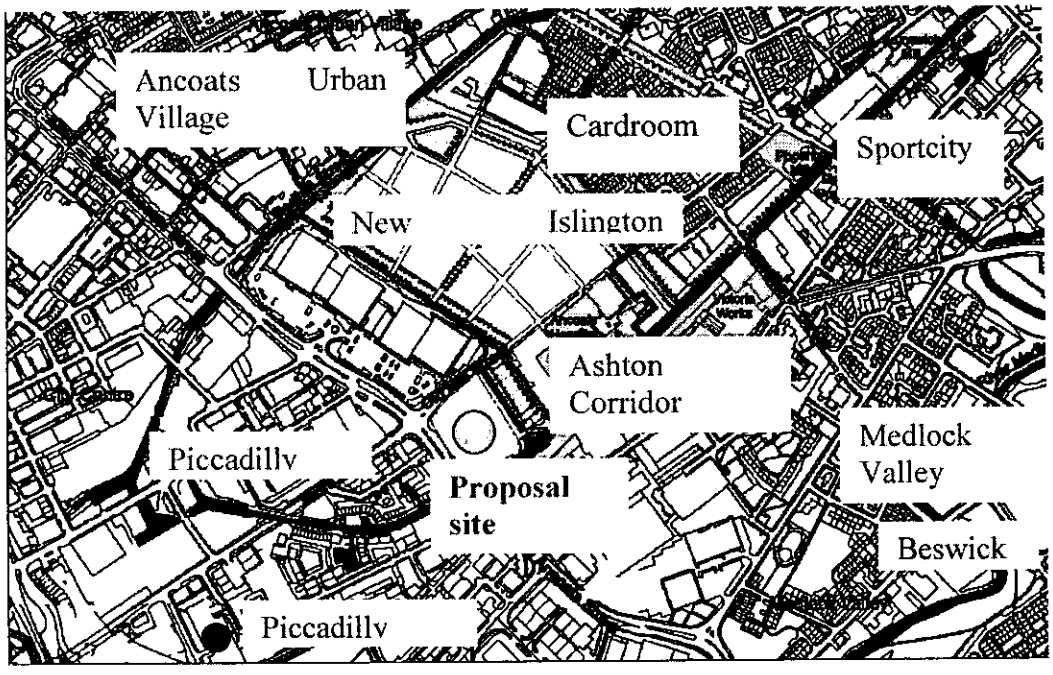
11.34 The proposal site is situated in the New East Manchester area – an area of 1,100 hectares, and 16 neighbourhoods, which has suffered from long-term decline, but which is now beginning to benefit from substantial redevelopment and regeneration activity, with large-scale funding from the Government's HMRI programme.

11.35 The proposal site is within the HMRI area, in the New Islington neighbourhood, situated between the Ancoats Urban Village and Ashton Canal Corridor neighbourhoods, the latter of which reaches out to the Sportcity complex.

11.36 Figure 11.2 below shows the general regeneration context for the proposal site:

[1] Note: Regional UK = UK excluding London

Figure 11.2 Regeneration Programmes in Neighbouring Communities



Source: New East Manchester Regeneration Framework 2001

11.37 The areas on the southwest fringes of the HMRI, closest to the city centre, are currently undergoing a massive transformation and the proposal site is adjacent to a number of redevelopment schemes, comprising a mix of uses including residential and commercial development and community facilities.

11.38 While economic recovery in the city centre has been accompanied by an influx of population, the communities to the east suffered sharp population declines, continuing into the 1990s, due to a variety of issues, identified in the New East Manchester Regeneration Framework:

- A 'fragile' economic base, arising from a 60% employment loss from 1975 to 1985, as the traditional manufacturing base shrank dramatically, and leading to 12% unemployment, with 52% of households receiving benefit;
- A collapse in the local housing market, accompanied by 20% vacant properties, and negative equity, leading to substantial population losses;
- A predominantly low, outmoded skills base;
- Social issues including high crime, poor health;
- Poor infrastructure and environment; poor community and retail facilities.

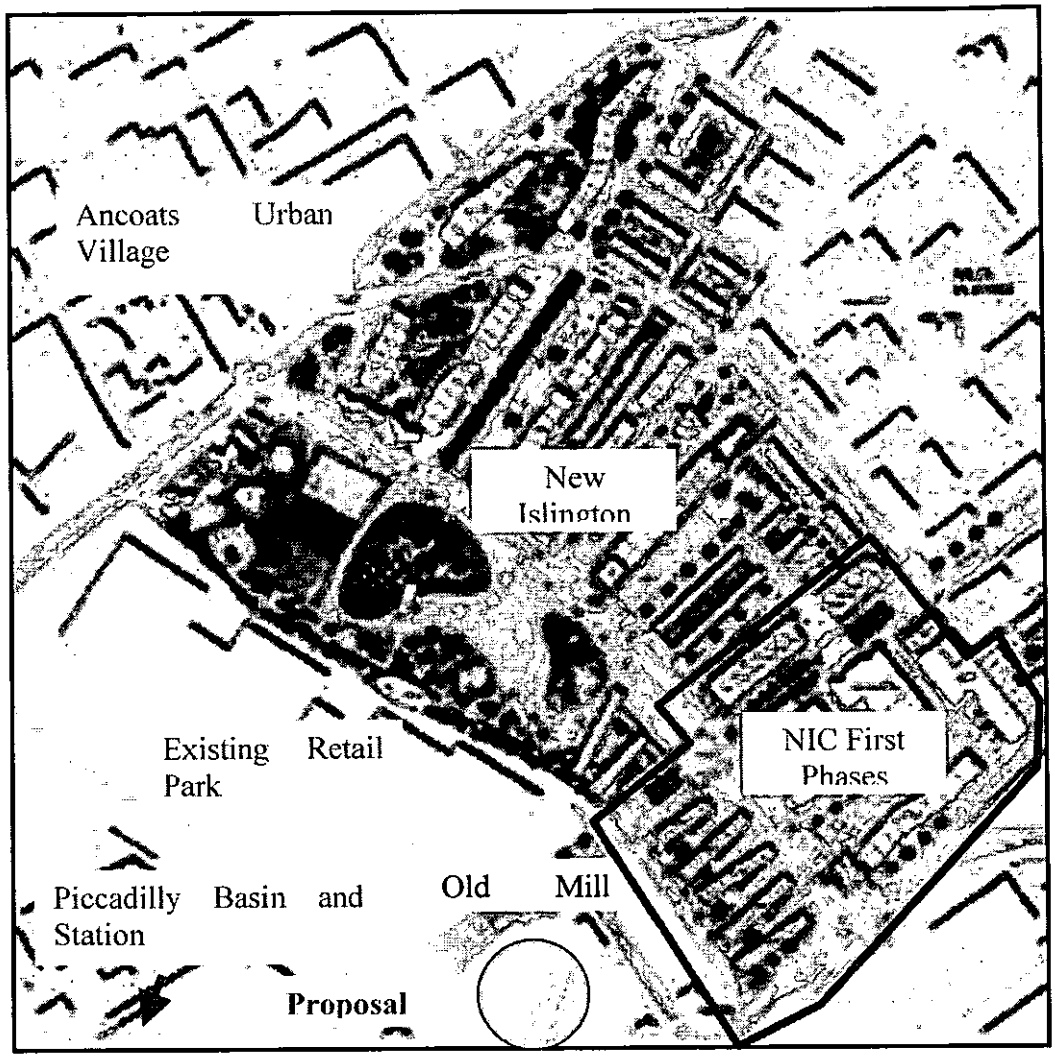
11.39 Over the next ten years and beyond, the Regeneration Framework provides the basis for the regeneration of East Manchester. Its objectives, some of which are already being achieved, include:

- Doubling the population to 60,000 over 10 to 15 years, by building up to 12,500 new homes, and improving 7,000 existing homes;
- Creation of 10,000 new jobs;
- Creating a 160 hectare business park;
- Providing the £100 million Sportcity complex, including a 48,000 seat stadium and associated facilities;
- Creating a new town centre with 120,000 sq ft of retail provision;
- Raising educational attainment to a level above the city average.

11.40 The efforts of the Urban Regeneration Company, New East Manchester Limited, with strong public and private sector support, have already made a strong start on tackling these issues, with a number of important projects already completed or in progress, for example: The Sportcity complex; Northern Business Park; Ancoats Urban Village; New Islington Community.

11.41 Figure 11.3, below, reveals the more immediate plans for the area, showing the masterplan for the adjacent New Islington Community, planned to accommodate 1,400 new homes together with workshops, office space and urban amenities including shops, cafes, pubs and community facilities, including a primary school, health centre, crèche, community centre and recreational facilities. Infrastructure works are already in progress, with first houses planned for completion in 2004/05.

Figure 11.3 Regeneration Programmes in Neighbouring Communities

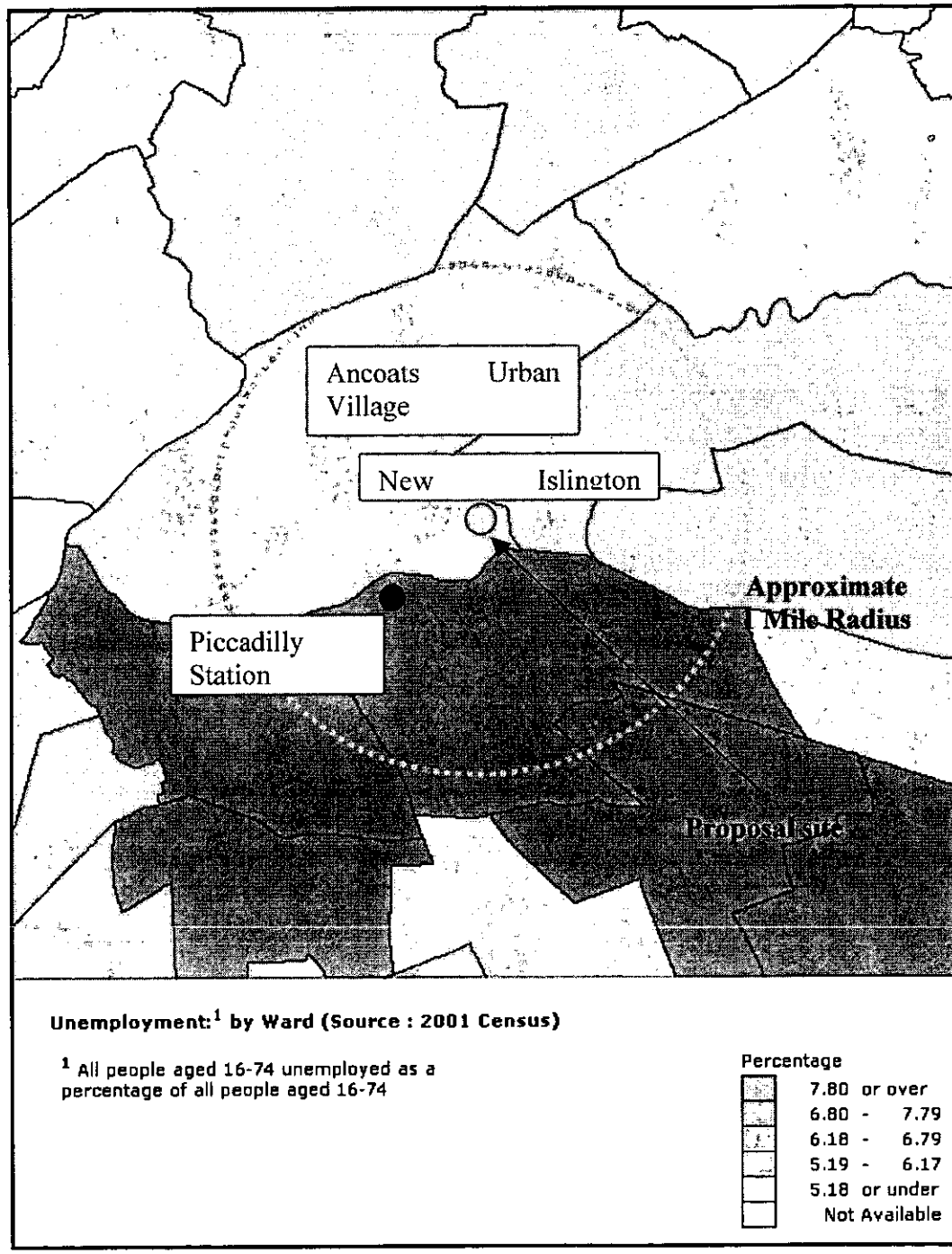


Source: NIC web site, accessed November 2004

11.42 development, with Old Mill Street set to be the focus of the urban amenities planned for the new community.

11.43 However, these programmes are in most cases only just beginning to have an impact: the neighbourhoods to the north and east of the proposal site still exhibit many deep rooted problems, particularly in relation to economic progress. These areas are characterised by general deprivation, with economic issues being paramount – as Figure 11.4 below shows:

Figure 11.4 Unemployment in the Wards closest to the Proposal site



11.44 In 2001, the wards adjacent to the proposal site all had census-based unemployment rates of over 6%, well above the national average. The five nearest wards currently contain 1,833 unemployed on the claimant count basis.

11.45 However, unemployment data reveals only part of the story. An analysis recently undertaken in respect of the nearby Ducie Street proposal (approximately 400 metres from the proposal site) showed that within a 1 mile radius of that site, at the detailed output area level, in 50 out of 68 Census Output Areas, less than half of adults aged 16-74 were in work in 2001. In 11 of the Output Areas, less than 1 in 4 adults (aged 16-74) were working.

11.46 The same analysis found a similar position on economic activity rates, which are typically below 50% of the 16-74 population in the surrounding areas (Fig. 1.5). When compared with the averages for England and Wales, the contrast in economic circumstances is stark:

Figure 11.5 Comparison of Economic Indicators for Ducie Street Scheme Catchment Area and England & Wales, 2001

Percentages	Ducie Street Site Catchment	England & Wales
Unemployed	5.3%	3.4%
In work	33.6%	60.6%
Economically Active	45.8%	66.5%

Source: Census 2001

11.47 In summary, it is clear that this locality has lacked for employment opportunities over a long period of time. The labour catchment area, as defined above, contains over 15,800 adults aged 16-74. Of this total, the retired population accounts for only around 1,000. Of the other 14,800:

- Only 5,300 have jobs;
- Only half are economically active.

11.48 Crime is also a local issue. The site is close to the railway station, city centre car parks, and has suffered from above average crime rates, in the Cardroom Estate area, and especially in the Old Mill Street area.

11.49 In summary, it is evident that the area needs investment that will bring jobs and working people into the area to transform its character, in keeping with the aims and objectives of City-wide and local regeneration policies and programmes.

Potential Impacts

11.50 The potential socio-economic impacts of the proposed development on the local markets for the uses proposed, and on the economy and labour market are as follows:

- Impacts on the central Manchester markets for residential development (Options I and II) and hotels (Option I);
- Direct permanent and direct temporary employment;

- Indirect induced and income effect employment impacts;
- Impacts on the local economic structure;
- Impacts on the local and wider labour markets - the availability of skills, and impact on access to employment opportunities for the unemployed;
- Impacts on the local population;
- Regeneration impacts, including catalytic effects on investment and impacts on quality of life factors such as crime.

11.51 Most of these impacts are likely to relate to the City centre itself, and to the nearby regeneration areas of East Manchester, and the assessments have been based on these areas.

Impact Assessment

11.52 The proposed development comprises a mixed use development, dominated by residential units, with associated retail units, and with a second option to provide a hotel:

- **Option I:** 5 Blocks of residential accommodation, comprising 541 dwellings in 3 phases, 483 sq m of 'small' retail, and 1,293 sq m of 'large' retail - a local urban supermarket, and 572 sq m of cafes/ bars/ restaurants
- **Option II:** Essentially as Option I, with the addition of a circa 100 bedroom hotel, likely to be a 3 or 4 star hotel, possibly a boutique with a reduction in the number of dwellings from 541 to 519.

Employment impacts

Direct permanent employment impacts

11.53 Based on OFPAT guidelines, (as no operators for the employment generating uses are yet in place), the jobs generated directly by this development are expected to amount to around 117 for Option I and 198 for Option II, excluding any that might arise directly from the residential, plant or car parks elements, as follows (Figures 11.6 and 11.7).

Figure 11.6 Direct Employment Impact of Islington Wharf (Option I)

Option I	Fl Sp (sq m)/ Rooms	Fl Sp/ Rooms per Worker	Jobs
A1: Large Retail	1,293	20	65
A1: Small Retail	483	20	24
A3: Bars/cafes/ restaurants	572	20	29
Hotel			
Total			**117**

Source: QESR, based on OFPAT Best Practice Advice Note on Employment Densities

Figure 11.7 Direct Employment Impact of Islington Wharf (Option II)

Option II	Fl Sp (sq m)/ Rooms	Fl Sp/ Rooms per Worker	Jobs
A1: Large Retail	1,241	20	62
A1: Small Retail	483	20	24
A3: Bars/cafes/ restaurants	572	20	29
Hotel	104	1.25	83
Total			**198**

Source: QESR, based on OFPAT Best Practice Advice Note on Employment Densities

Direct temporary employment impacts

11.54 In addition to these direct permanent jobs, a significant number of direct temporary jobs will be created for the duration of the construction contract. No construction contractor is yet in place, but based on similar-sized projects, the site is likely to employ around 200 workers on average, during development, with higher peak levels, dependent on the final phasing.

Indirect employment impacts

11.55 The indirect impacts of employment generated by the development will be relatively small as the primary (residential and retail) uses are unlikely to be major generators of indirect expenditure and jobs (by comparison with Manufacturing enterprises, for example). On the basis of official guidance to RDAs and English Partnerships on the employment impacts of economic development, a relatively low local induced supplier impacts of 10% has been assumed with additional income effect impacts of 10% for the direct employment generating uses, with a higher figure of 30% for the induced effects for the hotel use included in Option II.

11.56 These additional effects will result in total employment impacts as follows (Figure 11.8, below):

Figure 11.8 Total Employment Impact of Islington Wharf

	Direct	Induced	Income	Total
Option I				
Retail, cafes etc	117	12	13	142
Option I Total	**117**	**12**	**13**	**142**
Option II				
Retail, cafes etc	115	12	13	139
Hotel	83	25	11	119
Option II Total	**198**	**36**	**23**	**258**

Sources: QESR estimates, based on HM Treasury guidance to RDAs and EP

11.57 In addition to these beneficial effects, there is also likely to be increased expenditure in the area, arising from habitation within the development of about 860 to 900 residents, who are likely mainly to have lived elsewhere, previously. On the basis of estimates made for similar developments elsewhere, these residents are expected to generate increased expenditure of around £11.0mn per annum, supporting around 110 jobs. However, the extent to which these jobs will be included in, or additional to, the jobs generated in the retail/ commercial elements of the scheme is impossible to quantify.

11.58 The overall employment impact of the development is anticipated therefore to be around 142 (Option I) or 258 (Option II) jobs. These figures represent respectively additions of 0.1% (Option I) or 0.2% (Option II) of employment to the Central and New East Manchester employment total, as measured by the Annual Business Inquiry, 2002.

11.59 However, when viewed in terms of the NEM target of 10,000 jobs, these proportions amount to 1.4% (Option I) and 2.6% (Option II), assessed as a moderate beneficial effect and a substantial beneficial effect, respectively

Structural Employment Impact

11.60 It is anticipated that the structure of the direct employment created by the development, by comparison with the local economy, will be as follows (Fig 1.9):

Figure 11.9 Structural Employment Impact of Islington Wharf

Sector	Direct jobs by sector	Central and New East Manchester Employment in Sectors	Jobs Created by Development as % of NEM and City Centre Total in these Sectors
Option I			
Hotels and catering	29	10,746	0.3
Retailing	88	21,816	0.4
Total	**117**	**162,260**	**0.1**
Option II			
Hotels and catering	112	10,746	1.0
Retailing	86	21,816	0.4
Total	**198**	**162,260**	**0.1**

Sources: QESR estimates, based on ABI Data

11.61 For Option I, it is assessed that the impact of the direct employment on both the retail and hotel sectors will comprise a minor beneficial effect; for Option II, the retail impact will be the same, while that on the hotel sector will be moderately beneficial. The analysis is presented for direct jobs only, as the indirect structural impacts of the development are considered too diverse to model effectively. The chapter now moves on to discuss labour market impacts.

Labour Market Impact

11.62 The impact on the local labour market has been modelled by using the sectoral profile of employment above to generate an expected profile of the jobs generated by major occupational group, indicating the range of skills and experience likely to be required. This has been done by using the Skillsbase forecasts for the North West Region (Ref 1.23) to allocate the jobs created (by industrial sector, as identified above) into occupational groups, assuming that sectors in Manchester employ the various occupations in proportions similar to the regional average for these sectors. The Skillsbase forecasts are based on broader sectoral groups than the detailed analysis above and the technique requires some aggregation into these broader sectors, to enable the analysis to proceed.

11.63 Figure 11.10, below, sets out a potential occupational profile for the development, based on this approach, and compares the profile to the availability of labour in those occupations across Manchester.

Figure 11.10 Comparison of Proposed Development Requirements and Labour Force Capacity by Major Occupational Group

Occupational group	Occupational Profile: Option		Impact		
			Employed in Occupational Group in Manchester (City Council)	As % of Manchester: Option	
	I	II		I	II
Managers and senior officials	19	32	15,302	0.1%	0.2%
Professional occupations	2	4	19,528	0.0%	0.0%
Associate professional and technical occupations	8	13	18,907	0.0%	0.1%
Administrative and secretarial occupations	10	17	17,866	0.1%	0.1%
Skilled trades occupations	16	28	11,899	0.1%	0.2%
Personal service occupations	4	6	10,907	0.0%	0.1%
Sales and customer service occupations	29	49	12,532	0.2%	0.4%
Process, plant and machine operatives	8	14	11,763	0.1%	0.1%
Elementary occupations	22	37	23,531	0.1%	0.2%
Totals	**117**	**198**	**142,235**	**0.1%**	**0.1%**

Sources: Census 2001; QESR Estimates based on DFES Skillsbase Regional Projections, 2005

11.64 The profile shows that the proposed development is likely to create jobs across a broad spectrum of occupations, with no groups really dominating the picture. Therefore, the impacts on particular skills pools across Manchester are assessed as being negligible, with the development requiring no more than 0.4% of the existing labour pool in any specific occupational group, for either development option.

11.65 While some of the jobs will be in higher level managerial and professional occupations, a substantial proportion will be created in positions which will require intermediate (22%) or lower level qualifications and skills (53%) (Option II:– 23% and 54%) – this means that the development will provide work opportunities for a broad range of individuals, including those not currently engaged in the labour market. This is assessed as a substantial beneficial effect for both options

11.66 Below, its potential for assisting in the economic regeneration of the deprived areas in the vicinity of the development is considered further.

Regeneration Impacts

11.67 The proposed development has significant potential to create beneficial impacts on the deprived areas in the locality of the proposal site, both in strategic terms, by encouraging investor confidence in this New East Manchester fringe location, close to central Manchester, and in practical terms by providing attainable work opportunities for local people.

11.68 The current Economic Development Plan for the City Pride area has set a number of specific strategic objectives under Driver Four - Delivering Local Economic Benefit, consistent with linking local people into the kinds of jobs generated by this proposal:

- To upskill local unemployed people in accordance with labour market needs;
- To increase the numbers of people from key regeneration areas entering and sustaining employment;
- To achieve overall improvement in, and convergence towards, national levels of unemployment, particularly long-term unemployment;
- To achieve overall improvement in, and convergence towards, national economic activity rates;
- To achieve overall improvement in, and convergence towards, national employment rates;
- To achieve overall improvement in, and convergence toward, national average earnings;
- To improve local levels of literacy and numeracy;
- To promote social inclusion and equal opportunities in all we do so that all individuals in the City Pride area have the chance to participate and achieve to the maximum of their ability.

11.69 Similarly, the Manchester Community Strategy (MCS) emphasises the need for inclusive policies, and education and training programmes to 'increase residents' skill levels and employability, to reflect the changing demands of the local economy, rebuilding an employment culture in communities where it is absent, informal or under-stated, and enabling them to access employment opportunities as they become available'.

11.70 Within this City-wide framework, the regeneration proposals for New East Manchester embody similar objectives seeking to build on communities' own priorities, and on the social, economic and physical programmes already targeted on East Manchester. These include the combined New Deal for Communities / Single Regeneration Budget programmes in Beswick, Clayton and Openshaw, entitled Beacons for a Brighter Future, while an Education Action Zone, Sports Action Zone, and Sure Start programme also all operate within the same area.

11.71 Taken together, the programmes provide the basis for a major improvement in the lives and prospects of residents, driven by these central objectives:

- reducing unemployment by creating and securing jobs for local people;
- tackling and improving community safety;
- improving the health and well-being of the community;
- increasing educational attainment and access to work;
- providing resources to improve housing conditions and community and leisure facilities.

11.72 Discussions with New East Manchester Ltd indicate that they would welcome an investment of this type in this location, where it is seen as assisting with the linkage of projects, such as Ancoats Urban Village and the New Islington Community with central Manchester, helping to create investor confidence in this 'grey area' between New East Manchester and the city centre.

11.73 Apart from this strategic contribution, the development has the potential to assist more directly by introducing more spending power into the area, from both new permanent New East Manchester residents and (in respect of Option II) visitors to the hotel, especially in the category of business tourism, a target market for the City Council.

11.74 Most importantly, the development will also provide direct and indirect employment opportunities for unemployed and under-employed residents of the nearby deprived communities. As indicated in the baseline analysis, Within the 5 most proximate wards, which are all in the most deprived 1% in Britain in 2000 (Fig 11.11, below), there were over 1,800 unemployed claimants, as at October 2004:

Figure 11.11 Deprived Wards in New East Manchester and the City Centre, Near to the Proposed Development

Ward Name	Unemployed Claimants October 2004	Ranks of wards (of 8,414 in Britain) for selected domains						
		Index of Multiple Deprivation	Income	Employment	Health	Education	Housing	Child Poverty Index
Beswick and Clayton	349	17	57	67	41	111	593	95
Bradford	325	22	43	37	39	294	723	181
Ardwick	452	29	66	21	46	599	402	131
Central	375	41	110	43	36	279	1,032	198
Newton Heath	334	45	160	84	35	130	1,046	464

11.75 Deprivation is rife in these wards with the emphasis on indicators of economic disadvantage. Clearly, the area can benefit from the increased access to employment opportunities that the proposed development will bring, primarily in lower level occupations that can realistically be filled by those local residents not currently in work, and possessing relatively few qualifications or skills.

11.76 For the purposes of assessing impacts on the local communities' employment prospects, it has been assumed that 50% of the jobs in intermediate and lower skills categories can be filled by those currently unemployed, and living within the communities nearest to the application site. This amounts to about 45 positions for Option I and 75 positions for Option II, in total – equal to reductions of 2.5% (Option I) and 4.1% (Option II) in the numbers of unemployed claimants in the nearest 5 wards – a substantial beneficial effect in either case, although, clearly the effect for Option II would be greater.

Impacts on Local Skills - Recruitment and Training

11.77 As no hotel operator has yet committed to the hotel component of the proposed development, (the main source of employment under Option II), and as the rest of the employment will be dispersed amongst a range of occupiers and employers, it is not possible to put forward a specific recruitment and training package in relation to the majority of the jobs for either option. Nevertheless, as indicated above, the anticipated profile of jobs includes many that require only lower order skills, indicating a clear potential for employers at the scheme to take on and train local unemployed people from the nearby deprived areas of New East Manchester.

11.78 Furthermore, the developers for Islington Wharf, ISIS, operate to a Sustainability Charter. Under the theme of regeneration, one of the objectives is to foster economic diversity and independence, facilitating access to employment for local people and stimulating entrepreneurship and creativity. One of the specific sustainability criteria is that credit is given where 'access to employment for the local workforce has been addressed.'

Impacts on the Local Housing Market and Population

11.79 The 541 and 519 residential units proposed respectively for Options I and II, for Islington Wharf, comprise a mix of one, two and 3 bedroom units, expected to house 860 (Option II) to 900 (Option I) people on the following bases (Fig 1.12):

Figure 11.12 Population Impacts of Proposed Development

	Unit Sizes (Beds)			
	1 bed	**2 Bed**	**3 Bed**	**Totals**
Option I				
Number of Units	198	290	53	**541**
Ave Persons per Unit	1.2	1.8	2.6	
Population	**238**	**522**	**138**	**897**
Option II				
Number of Units	184	289	46	**519**
Ave Persons per Unit	1.2	1.8	2.6	
Population	**221**	**520**	**120**	**861**

Source: QESR estimates, based on average household sizes in Manchester City Centre, and distribution of apartment types and sizes.

11.80 The target increases for New East Manchester for people and homes are an additional 30,000 population and 12,500 new homes. Option I will contribute 541 homes towards the housing target, and Option II, 519. These figures represent increases of 4.3% and 4.2%, both assessed as substantial beneficial effects.

11.81 Due to the size of the units, the apartments are likely to be bought mainly by individuals and couples not presently living in central Manchester, the proposed development will contribute a net 860 to 900 residents towards the population target, representing 2.9% (Option II) and 3.0% (Option II) of the target total for New East Manchester, respectively. These effects are also assessed as having substantial beneficial effects, in both cases.

Impacts on Crime

11.82 During development of the scheme's design, liaison has been undertaken with the Greater Manchester Police Architectural Liaison Officer and he is now satisfied with security aspects of scheme. No requirement has been specified for CCTV as the passive surveillance built into the scheme's design has been assessed as adequate.

11.83 Given the current issues of crime, crime rates in the area are expected to reduce significantly, and the scheme is therefore assessed as having a substantial beneficial impact on local crime levels.

Proposed Mitigation

11.84 None of the impacts identified above will produce adverse impacts on either the local economy or labour market, or on the regeneration areas adjacent to the site, therefore no special mitigation measures will be required. A number of positive benefits will accrue from the development, and these are described briefly here.

11.85 The proposed development will convey a range of benefits, in accordance with the impacts described above:

- Job creation amounting to **142 permanent direct and indirect jobs (Option I)**, or **258 jobs (Option II)** (plus an average of 200 temporary construction jobs, during the anticipated build period of 4 years;
- Work opportunities available across a wide range of positions, including many suitable for residents in neighbouring deprived wards, **with the potential to reduce unemployment by 2.5% (Option I) or 4.1% (Option II) within the 5 nearest wards to the site**;
- A development complimentary to the policies of the Regional Strategy, City Council's economic development and regeneration plans and strategies, helping to support previous and planned investments in the area, notably those at Ancoats Urban Village and the New Islington Community;
- A development attracting further population and spending into New East Manchester,:
  - contributing over 500 homes towards the new housing target of 12,500, and
  - nearly 900 people towards the target of 15,000, and
  - supporting the development of the visitor sector and knowledge economy;
- An increase in street level activities, in a part of Manchester suffering from high crime levels, which will contribute to **safer living and working conditions**.

Conclusion and Residual Impacts

11.86 The proposed development is consistent with socio-economic policies at regional, sub-regional, and local levels.

11.87 Situated on the fringes of central Manchester and at the south west edge of New East Manchester, the development will reinforce the emergence of this quarter as a residential location, built around the canals that lead outwards into the deprived areas to the east. In itself it will contribute directly and substantially towards the challenging housing and population targets set for New East Manchester.

11.88 The development will also assist the credibility and viability of housing and related neighbourhood development proposals in the adjacent New Islington Community, (for which Old Mill Street is planned to provide the main local shopping), and Ancoats Urban Village. It will also support other developments taking place in the vicinity, such as the new leisure proposals at Sportcity and further development of the knowledge centres based in the Higher Education Precinct, to the south and west.

11.89 Crime rates are expected to drop once the scheme is completed and occupied, and the shopping units brought into use.

11.90 If approved, the project will create between around 140 and 260 jobs, (dependent on which option is developed), in a part of Manchester which is close to some of the most economically deprived areas of Britain, and in occupations which will be accessible to those without higher level or intermediate level qualifications. There will also be substantial temporary construction work, averaging around 200 jobs over the construction period.

Summary of Impacts

11.91 The potential impacts, proposed mitigation and residual impact are summarised in the following tables, figures 11.13 and 11.14. The socio-economic residual impacts are all beneficial.

Figure 11.13 Summary of Impacts – Socio Economic Assessment Option I

Impacts					
Economic	Labour market		Regeneration Impacts		
Criteria and Measures					
Aggregate growth	Skills Balance		Unemployment change	Population Increase	Housing Increase
% of target of 10,000 new jobs	% take of jobs in major occ. groups	% of jobs in lower skilled groups	Number out of work	% of target of 30,000	% of target of 12,500
Impact areas					
New East Manchester	New East Manchester	New East Manchester	Nearest 5 Wards	New East Manchester	New East Manchester
Effects					
Moderate Beneficial	Negligible	Substantial Beneficial	Substantial Beneficial	Substantial Beneficial	Substantial Beneficial

Figure 11.14 Summary of Impacts – Socio Economic Assessment Option II

Impacts					
Economic	Labour market		Regeneration Impacts		
Criteria and Measures					
Aggregate growth	Skills Balance		Unemployment change	Population Increase	Housing Increase
% of target of 10,000 new jobs	% take of jobs in major occ. groups	% of jobs in lower skilled groups	Number out of work	% of target of 30,000	% of target of 12,500
Impact areas					
New East Manchester	Manchester	New East Manchester	Nearest 5 Wards	New East Manchester	New East Manchester
Effects					
Substantial Beneficial	Negligible	Substantial Beneficial	Substantial Beneficial	Substantial Beneficial	Substantial Beneficial

References

- OffPAT 2001, Using Employment Densities to Forecast Job Outputs: Best Practice Advice Note No 1;
- Office for National Statistics 2001, Census of Population;
- HM Treasury, 1995, A Framework for the Evaluation of Regeneration Projects and Programmes;
- Estates Gazette, 29th March 2003, Manchester Survey, Focus Residential;
- Government Office for the North West, March 2003, Regional Planning Guidance for the North West - RPG13;
- North West Development Agency, March 2003, Regional Economic Strategy;
- City Pride Partnership, Economic Development Plan April 2001 - March 2004;
- Manchester Local Strategic Partnership, April 2002, The Manchester Community Strategy, 2002-2012;
- Manchester City Council, Manchester City Centre Strategic Plan - 2004-2007;
- Manchester City Council, 2001, A New Town in the City - New East Manchester Regeneration Framework;
- City Pride Strategic Lifelong Learning Partnership, July 2002, Moving Forward;
- Manchester City Council, April 2002, Manchester City Centre Strategic Plan - 2002/05;
- Manchester City Council, December 2003, Hotel Schemes in Manchester;
- Manchester City Council, December 2003, City Centre Housing Schemes;
- Manchester City Council, Economic Facts - on City Council Web-site;
- Manchester City Council, April 2002, City Centre Data File 2001;
- Manchester City Centre Management Company, Spring 2002, This is Manchester;
- Star UK Web-site, Key Facts of Tourism for the North West of England, 2002;
- Caterer and Hotelkeeper Magazine, 6-12 February 2003, Games Effect Keeps Manchester Buoyant;
- DTZ Debenham Tie Leung, June 2004, Manchester City Centre Residential Market Study for Inacity;
- NOMIS, 2004, Labour Force Survey Data;
- Annual Business Inquiry, 2002, Employees in Employment Data;
- DfES, 2001, Skillsbase Regional Projections, 2005;

- Office for National Statistics, Neighbourhood Statistics, 1998, Indices of Deprivation;
- NOMIS, 2004, Claimant Unemployed Statistics;
- Panell Kerr Foster, 2002, Eurocity Survey;
- Panell Kerr Foster, 2002, in British Hospitality: Trends and Statistics, 2002;
- Deloitte, 2004, HotelBenchmarking Surveys, various dates;
- Manchester City Council, various Manchester Updates - on City Council Web-site;
- Manchester City Council, August 1998, Manchester Update;
- Manchester City Council, April 2004, Manchester Update;
- ODPM, January 2004, Competitive European Cities: Where do the Core Cities Stand?
- The Work Foundation, 2003, Manchester Ideopolis? Developing a Knowledge Capital.

12. Noise and Vibration

Introduction

12.1 This chapter has been prepared by Arup Acoustics. It provides an assessment of the impact of noise and vibration associated with the Islington Wharf development.

12.2 This chapter also addresses the effects of existing noise sources on the proposed residential development as well as the impact of potential noise sources associated with the development upon itself. Therefore both intra and inter effects have been covered in full.

12.3 Two options have been proposed for the mixed-use development of the subject site. The proposed layout of each option is identical with the exception of a hotel located on the corner of Great Ancoats Street and Old Mill Street that only appears in Option II. This assessment considers the impact of both options described in Chapter 3.

12.4 Noise and vibration sources addressed as part of the impact assessment include:

- Building services and plant noise from the development;
- Road traffic noise serving the development;
- Car parking and retail deliveries;
- Patron noise from the A3 use; and
- Construction activities and associated traffic noise.

12.5 A noise survey was carried out to determine the existing noise levels around the development site. The results of the noise survey are included in Appendix 12.1.

12.6 The existing environmental noise conditions at local noise sensitive receptors have been quantified. Changes in traffic flows around the site due to the proposed development, based on traffic flow data that includes the committed flows associated with the adjacent New Islington development, have been considered in terms of noise impact. In addition, noise limits have been recommended for building services plant and for activity noise from the development in order to minimise potential noise disturbance at existing noise sensitive receptors.

Baseline Conditions

Existing Noise And Vibration Sources

12.7 Road traffic noise along Great Ancoats Street, to the south of site, and along Old Mill Street, to the west of the site, are the dominant noise sources around the proposed development.

12.8 Noise from water flowing through a lock along the Ashton Canal was audible at the east side of the site.

12.9 At night, distant plant noise was audible from factories to the south of the development site.

12.10 No significant sources of vibration were identified around the site.

Existing Noise Sensitive Receivers

12.11 External to the site, there are commercial properties on the more distant side of Great Ancoats Street and residential properties on the far side of Pollard Street. There is a retail park facing the development site on Old Mill Street. A new residential development, New Islington, is being constructed to the North on the other side of Vesta Street.

12.12 Other noise sensitive receptors are located at some considerable distance from the site. New residential properties are located to the north of the site. Residential properties are also located beyond the retail park to the west, however, these will be screened by the retail units.

Baseline Noise Survey

12.13 A baseline noise survey was undertaken between the dates of Tuesday 11 May and Thursday 13 May 2004 to establish the highest daytime and the quietest night time noise levels. Noise levels were continuously monitored at the centre of the site (Location M4) and attended measurements were made during the periods of high and low noise levels at other locations.

12.14 A summary of the results obtained is given in Figures 12.1 and 12.2.

Figure 12.1: Mean and highest measured noise levels measured during daytime rush hour periods, dB.

Location	Mean		Highest	
	$L_{Aeq,5min}$	$L_{A90,5min}$	$L_{Aeq,5min}$	$L_{A90,5min}$
M1	71	64	75	66
M2	68	60	73	61
M3	71	59	76	61

Figure 12.2: Lowest noise levels measured during the night, dB.

Location	Time	Lowest $L_{Aeq,5min}$	Lowest $L_{A90,5min}$
M1	23:32	65	54
M4	01:38	42	41
M5	00:36	46	40
M6	23:59	48	42
M7	00:08	48	40
M8	00:52	45	36

12.15 During the day the dominant noise source around the site was road traffic, including HGVs and buses, on Great Ancoats Street and Old Mill Street. Occasionally, aircraft were audible.

12.16 During the night the main noise source was intermittent traffic along Great Ancoats Street and Old Mill Street. Traffic noise from Pollard Street and noise from water leaking through the lock gates was audible at M5. At M6 generator noise was audible from the site on the far side of Vesta Street. This generator noise was not audible at M7 and M8, but fan noise from a foundry on the opposite side of Great Ancoats Street was audible.

Methodology and Terms Of Reference

12.17 It is common to assess and specify plant noise criteria with reference to the *Method for rating industrial noise in mixed residential and industrial areas* given in BS 4142: 1997. This standard provides a method for rating external noise levels from factories, industrial premises or fixed installations of an industrial nature, such as building services plant, to determine the likelihood of complaints from occupants of nearby residential properties. The method is based on the difference between the background noise level without the industrial source and the rating noise level of the industrial source, both being considered at the receiver location.

12.18 Differences in road traffic noise become perceptible when a change in noise level of around 3 dB or greater occurs. For this magnitude of change, an increase or decrease in vehicle flow of around a factor of two or more (or a more modest change but with a significant change in heavy vehicle flows) is required.

12.19 The *Environmental Protection Act* provides Local Authorities with powers to take action against noise and vibration nuisance arising from premises. It is possible for a noise generating use to comply with a planning condition but still to cause a nuisance, if the noise climate changes from that which existed when the original condition was set, or if it was set in error. Commercial operators can use the defence that they have used best practicable means to mitigate the nuisance.

12.20 British Standard 6472: 1992 *Guide to evaluation of human exposure to vibration in buildings (1Hz to 80 Hz)* provides guidance on assessment of vibration levels affecting people within buildings. Assessment criteria for a variety of building environments are given. For the assessment of intermittent vibration, the vibration dose value is described.

12.21 The *Control of Pollution Act* provides local authorities with the power to control noise from construction sites. The powers include prosecution for failure to comply with the requirements of a notice served under the act, and a system of providing consents for works to be carried out in a specified manner so as to reduce the likelihood of causing a nuisance. Noise generators can use the defence of best practicable means having been implemented to minimise the likelihood of a nuisance being caused.

12.22 BS 5228 *Noise and vibration control on construction and open sites: Part 1: Code of practice for basic information and procedures of noise and vibration control*, provides practical guidance on the control of construction site noise. The legislative background to noise and vibration controls is described, and recommendations are given regarding procedures for creating effective liaison between developers, site operators and local authorities. Methods for predicting and measuring noise are presented, and guidance is given concerning the measurement of vibration.

12.23 BS 5228 presents information on likely noise sources and on potential methods of noise control suitable to construction sites. These include selection of quiet machines, in particular those complying with the appropriate EU directives, machinery enclosure, work within acoustic sheds and acoustic screens. The effect of working hours on noise sensitive premises is discussed, and it is recommended that any work outside normal weekday working hours will require special consideration.

12.24 The standard BS 7385: Part 2: 1993 *Evaluation and measurement for vibration in buildings Part 2 Guide to damage levels from groundborne vibration*, provides guidance on damage to buildings in relation to both the magnitude and frequency of vibration. For example, for domestic properties in a good state of repair, the threshold for cosmetic damage for transient vibrations (those caused by buildings close to percussive piling, for example) increases from 20 mm/s at 15 Hz, up to 50 mm/s at 40 Hz and above. For continuous vibration (such as that caused by vibratory compaction or vibro-driving of piles) it is recommended that these levels are reduced by a factor of two. A conservative level of 10 mm/s may therefore be taken as a vibration level at which consideration may need to be given to the possibility of building damage.

Results of Analysis - Assessment of Impacts

Mechanical Services and Plant Noise

12.25 The noise levels propagating from the building to the outlying areas should be controlled to reduce the likelihood of noise-related complaints.

12.26 Noise from plant is usually assessed using the guidance given in with BS 4142:1997 *Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas.* The noise level from the plant (known as the specific noise level) is to be weighted by 5 dB if it displays an identifiable character (such as tonality, impulsiveness, or intermittence).

12.27 A difference of around + 10 dB or more between the background noise level and the rating level (the specific noise level plus any weighting for character) of the noise source at the receiver indicates that complaints are likely. Where the difference is around + 5dB it is of marginal significance, and where the difference is – 10 dB or more this is a positive indication that complaints are unlikely.

12.28 At this stage of the project the design of plant is not available. It is therefore necessary to set noise limits for plant through planning conditions in order minimise the likelihood of complaint. Noise from the mechanical services and plant associated with the development should not exceed the lowest measured background noise level at the receiver. Figure 12.3 gives the rating noise criteria that will be met by the sum of all the items of plant on the site. The specified plant noise level should be reduced by 5 dB if the noise displays an identifiable character.

Figure 12.3: Noise criteria for fixed plant specified as the highest permissible free field levels (dB L_{Aeq}) at any noise sensitive receiver.

Use	Max daytime (07:00- 23:00 hrs) rating level	Max night time (23:00-07:00 hrs) rating level
Residential / Hotel	42	36
Retail	47	41

Road Traffic Noise

12.29 Figure 12.4 shows the increase in volume of traffic on the roads immediately adjacent to the development site based on traffic flow data from Martin Stockley Associates. It should be noted that Do Minimum traffic flows include the Base flows and the committed flows associated with the separate New Islington development. The Do Something flows include a further increase in traffic due only to the Islington Wharf development. Further data on traffic flows can be found in Chapter 5 and Appendix 15.1.

Figure 12.4: Traffic flow increases around the development (peak hourly flows).

	Base	Do Minimum: Base + Committed	Do Something: Base + Committed + Islington Wharf	% Increase Over Do Minimum	Noise Level Change, dB
Option I					
Great Ancoats Street	3,007	3,097	3,157	2	0.1
Old Mill Street	1,075	1,268	1,359	7	0.3
Option II					
Great Ancoats Street	3,007	3,097	3,183	3	0.1
Old Mill Street	1,075	1,268	1,400	10	0.4

12.30 The predicted increase in traffic flow as a result of the Islington Wharf development, shown above, corresponds to an increase in noise level of much less than 1 dB and is therefore not considered a significant acoustic issue.

Occupational Noise

12.31 Vehicle access for the covered car parking and deliveries to the hotel and retail units have been proposed off Great Ancoats Street, to the west of Block A, in the centre of the Old Mill Street perimeter and along Vesta Street. Due to the entirely enclosed design of the car park and delivery area noise from vehicle movements with in this enclosed space will not be audible outside the site. In addition, noise levels from vehicles accessing these areas will not provide a significant increase on background noise levels.

12.32 Patron noise from the A3 use, located to the east side of the site overlooking the canal, may require control to ensure there is no significant impact at the nearest noise sensitive receivers.

Construction Noise

12.33 Details of construction methods and plant are not available at this stage of the project. It is therefore not possible to undertake a meaningful assessment of construction noise and vibration impacts. Principles for the mitigation of impacts are set out in the following section. These will be applicable to all construction methods.

Vibration Impacts

12.34 There is a risk that vibration from construction activities associated with piling will have an impact upon listed structures close to the site. However, use of Best Practicable Means can ensure there will be no vibration impact at these receivers. No other vibration effects have been identified.

Proposed Mitigation

Mitigation Of Operational Impact

12.35 There are a number of noise producing activities associated with the development that fall into three main categories: fixed plant, vehicle movements and occupational noise from buildings.

12.36 Noise from road traffic associated with the development has been assessed and will not provide a significant increase on existing traffic noise levels around the development site. This will not be a significant impact.

12.37 Occupational and commercial noise from vehicles moving around the car park and delivery areas has been assessed. Noise from the car park will not be audible outside the site except where vehicles are entering and exiting or using the delivery area, when noise levels will not provide a significant increase on background levels.

12.38 Patron noise from the A3 use may require control in terms of hours of operation to ensure there is no significant impact at the nearest noise sensitive receivers. This should be agreed by Condition.

12.39 No further mitigation is proposed at this stage.

Mitigation Of Construction Activities

12.40 The following points will be considered in preparing a scheme of work for the construction, in order to minimise the chance of adverse comment due to construction works. This scheme of work should be included as a Condition to the Planning Approval.

12.41 Details of construction activities, prediction levels and assessments will be discussed with the relevant authority, both prior to construction and during construction. Detailed construction programmes will be available in advance of work starting onsite. Prediction, evaluation and assessment of noise and vibration as well as discussion between the management team and Local Authority, should be a continuous activity throughout the construction period.

12.42 Control of working hours is, where reasonably practicable, a fundamental means of minimising the likelihood of complaint arising from noise and vibration. Works should be carried out in such a way as to limit, as far as reasonably practicable, the adverse noise and vibration impact of the construction activities.

12.43 Normal working hours should be defined: typical hours should be 07:30 to 18:00 hrs on weekdays (excluding public and/or bank holidays), from 08:00 to 14:00 hrs on Saturdays with no working on Sundays, public and bank holidays. The contractors should adhere to these normal working hours as far as reasonably practicable and, where practicable, operations anticipated to cause disturbance would be limited to these hours. A condition should be imposed on the planning application to this effect.

12.44 In order to maintain the above working hours, the contractor(s) may require a period of up to half an hour before and up to one hour after normal working hours for start up and close down of activities (not including operation of plant or machinery giving rise to noise likely to disturb nearby residents nor the arrival of any HGV at site before 07:30 hrs).

12.45 The list below sets out the foreseeable specific activities expected to be carried out in the start up and close down periods:

- Arrival and departure of workforce and site staff;
- Maintenance and checking of plant and machinery;
- General refuelling;
- Site inspections and safety checks prior to commencing work;
- Site meetings; and
- Site clean up.

12.46 Start up and close down periods are not an extension of normal working hours, and particular care should be taken to limit and control disturbance to local residents during such periods.

12.47 All repairs and maintenance should be undertaken during normal working hours. However, by exception, repair and maintenance may need to be carried out on Sundays, limited to between 09:00 and 16:00 hrs, or during extended working hours during the week. Activities outside normal working hours that could give rise to disturbance should be kept to a practicable minimum.

12.48 Where construction noise or vibration is likely to have an effect on residents or on other noise sensitive receivers, including listed structures around the site, Best Practicable Means should be used to minimise noise, to achieve compliance with the relevant applicable legislation and standards, and ensure there are no significant vibration impacts.

12.49 Measures to be considered in implementing Best Practicable Means will be consistent with the recommendations of BS 5228 and should, where reasonably practicable, include as appropriate careful selection of plant, construction methods and programming. Only plant conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions should be used. Specific measures to be employed may include, where reasonably practicable:

- Provision of lined and sealed acoustic covers for equipment, which must be in place during use of equipment;
- Regular maintenance of all equipment;
- Operation of equipment in the mode of operation that minimises noise;
- Shutting down equipment when not in use;
- Avoiding waiting or queuing on the public highway with engines running;
- Construction of temporary infrastructure to minimise noise and vibration;
- Selection of piling and other construction methods which minimise noise and vibration;
- Breaking out concrete by means other than percussion;
- Noise reduction measures for temporary ventilation equipment;
- Handling all materials in a manner which minimises noise;
- Where audible warnings are necessary for reversing vehicles, operations will be planned to minimise reversing;
- Fitting of silencers to all plant, machinery and vehicles.
- Design and use of site hoardings and screens, where practicable and necessary, to provide acoustic screening at the earliest opportunity. Where practicable, doors and gates should not be located opposite occupied noise-sensitive buildings;
- Choice of routes and programming for the transport of construction materials, spoil and personnel.

12.50 Unless otherwise agreed with the relevant Local Authority, any prediction of noise and vibration levels will be in accordance with the methods set out in BS 5228. However, source levels for items of plant or activities should, where practicable, be based upon measured levels or other authoritative sources agreed with the Local Authority rather than those estimated from the generic tables in BS 5228. Also where noise and vibration measurements during the works give rise to more accurate information on levels and propagation characteristics, this information should be used in addition to or instead of the generic assumptions in BS 5228.

12.51 The contractors should comply with the guidance and procedures given in BS 5228 Parts 1, 2 and 4 and in the case of vibration, reference should be also be made to BS 7385 and BS 6472 as necessary. Where alternative authoritative guidance and procedures are thought to be more reasonable and have been agreed in advance with the Local Authority, these could be adopted instead.

Conclusion and Residual Impacts

12.52 There are a number of noise and vibration producing activities associated with operation of the development that fall into three main categories: fixed plant, vehicle movements and occupational noise from buildings. Noise and vibration from these and from construction of the development will be controlled to avoid disturbance to local residents within and outside the development.

- Noise from fixed plant will be mitigated through local control, to be agreed by Condition.
- Noise from vehicle movements has been assessed and will not provide a significant increase on existing noise levels from traffic at existing noise sensitive receivers.
- Operational noise from vehicles moving into, out of and around the car park and delivery areas, for occupational or commercial use, has been assessed and will not provide a significant increase on existing noise levels around the site.
- Operation of any A3 use may require control through Conditions to the Planning Approval.
- Construction noise and vibration will be mitigated as set out above.

12.53 Overall it is expected that any noise impact and vibration from the site can be controlled to acceptable levels through good design, mitigation and Best Practicable Means. Consequently, no significant residual impacts of noise or vibration are anticipated.

Effects Of Noise From Existing Sources On The Proposed Development

Potential Impacts

12.54 The planning process for residential development requires consideration of whether the noise climate in the area is suitable for residential use. The overall scheme proposes to develop a maximum of 541residential units (Option I includes 541 units and Option II includes 519 units) upon which the impact of the surrounding environment has been considered. This issue is discussed in this section.

Methodology and Terms of Reference - PPG 24

12.55 *Planning Policy Guidance note 24* (PPG24), published by the Department of the Environment, sets out the Government's policies relating to noise as it affects development control. PPG24 outlines the considerations to be taken into account in determining planning applications for noise sensitive uses, and activities that generate noise. PPG24 uses noise exposure categories (NECs) for proposed residential development affected by transportation noise or mixed source (those where no one source is considered dominant), and recommends appropriate levels for exposure to different sources of noise. The guidance also advises on the use of planning conditions to minimise the impact of noise.

12.56 One of the general principles of PPG24 is that, where practicable, noise sensitive developments should be separated from major sources of noise, and new developments involving noisy activities should, if possible, be sited away from noise sensitive land uses. However, it does recognise that there will be circumstances where it is acceptable or even desirable in order to meet other planning objectives to permit noise generating activities on land near noise sensitive uses. Nevertheless, the local planning authorities must ensure that development does not cause an unacceptable degree of disturbance. In such cases it is suggested that local authorities consider the use of planning conditions or obligations to safeguard amenity. It is recommended that the noisiest activities are kept away from the boundaries in such cases, or that measures are provided to reduce the impact of the noise.

12.57 The noise exposure categories and the levels of road traffic noise and mixed sources that apply to new residential property are given in Figures 12.5 and 12.6.

Figure 12.5: Noise exposure categories from PPG24

NEC	Description
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there is no alternative quieter site available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

Figure 12.6: Recommended noise exposure categories for new dwellings near existing noise sources from PPG24

Noise levels corresponding to the Noise Exposure Categories for new dwellings $L_{Aeq,T}$ dB				
Noise source and time of day	**Noise Exposure Category**			
	A	**B**	**C**	**D**
Road traffic				
07:00 – 23:00	<55	55 – 63	63 – 72	>72
23:00 – 07:00	<45	45 – 57	57 – 66	>66
Mixed sources				
07:00 – 23:00	<55	55 – 63	63 – 72	>72
23:00 – 07:00	<45	45 – 57	57 – 66	>66

12.58 Noise exposure categories should not be used for assessing the impact of industrial noise on residential property, unless the industrial noise is one of a number of sources, none of which is dominant. Individual assessment should be used, and PPG24 recommends the use of BS 4142: 1997 *Method for rating industrial noise affecting mixed residential and industrial areas.*

12.59 The noise exposure categories are specifically for the assessment of new residential properties being brought into areas affected by noise, and should not be applied to the reverse situation where new noise sources are planned adjacent to existing noise sensitive properties.

Results of Analysis - Assessment of Impacts

12.60 Target internal noise criteria for bedroom and living rooms generally applicable in Manchester are given below in Figure 12.7. These criteria are based on World Health Organisation recommendations as documented in *Guidelines for Community Noise (1999)*, BS 8233:1999: *Sound insulation and noise reduction for buildings - Code of practice*, and discussions with the Local Authority.

12.61 The following criteria on internal noise levels are usually imposed on residential developments within the Manchester city centre.

Figure 12.7: Internal noise criteria

Residential Spaces	Criteria
Bedrooms (night-time: 2300hrs to 0700 hrs)	30 dB L_{Aeq}
Bedrooms[1] (night-time: 2300hrs to 0700 hrs)	45 dB L_{Amax}
Living rooms (daytime: 0700hrs to 2300 hrs)	40 dB L_{Aeq}

Note: [1] Noise events should not exceed the given level more than 10-15 times per night.

12.62 For both proposed options residential accommodation is located in Block A overlooking Great Ancoats Street and Block D overlooking Old Mill Street. In addition, residential accommodation is also proposed in Blocks B, C and E, located further away from the roads. The hotel building proposed in Option I is located on the corner of these roads. Road traffic noise generated along these roads is considered the dominant noise source around the site and noise measurements made at M1, M2 and M3 are representative of the noise levels at these site boundaries.

12.63 Adjacent to Great Ancoats Street (Location M1) the highest measured noise level at peak rush hour times was 75 dB $L_{Aeq,5\ min}$, with a mean noise level of 71 dB $L_{Aeq,5\ min}$. Along Old Mill Street the highest noise level (76 dB $L_{Aeq,5\ min}$) was measured at M3, The mean noise levels were 69 dB $L_{Aeq,5\ min}$ and 71 dB $L_{Aeq,5\ min}$ at M2 and M3, respectively.

12.64 Assuming that the mean level at M1 is representative of the whole day time, in terms of PPG24, 71 dB L_{Aeq} would place this area in NEC C. This level is likely to be a high estimate since measurements were made at the noisiest times of the day. Night time noise measurements at M5 to M8 suggest levels of around 48 dB L_{Aeq}, which is NEC B. Mitigation of noise is therefore necessary to provide a satisfactory residential environment.

12.65 Residential accommodation is also proposed in Block B and C, located along the Vesta Street and Canal sides of the site. Road traffic noise levels at these locations and at the centre of the site are expected to be lower than those at the boundaries due to the screening effect of the buildings around the perimeter of the site.

Proposed Mitigation

12.66 The levels of noise from sources external to the development at the proposed residential and hotel buildings will require mitigation to limit break in noise.

12.67 Background ventilation for the residential and hotel accommodation overlooking Great Ancoats Street will be provided mechanically. In order to limit break in noise to these residential properties a glazing unit with a sound reduction index of 37 dB R_w is required.

12.68 At the time of writing the ventilation strategy for Block D, overlooking Old Mill Street, has not been confirmed. However, in order to limit break in noise at this façade bedrooms will require mechanical ventilation with a glazing unit that provides a sound reduction index of 37 dB R_w.

12.69 Living rooms along this façade will also require a glazing unit with 37 dB R_w sound reduction index if they are to be mechanically ventilated.

12.70 Natural background ventilation in living rooms overlooking Old Mill Street could be provided with standard trickle vents and a minimum of 47 dB R_w sound reduction index for the glazing unit.

12.71 All other residential and hotel accommodation overlooking the centre of the site will require a glazing unit providing 32 dB R_w sound reduction index to limit break in noise.

12.72 These mitigation measures will be included as part of the design of all the buildings.

Conclusion and Residual Impacts

12.73 The levels of noise from sources external to the development at the proposed residential and hotel buildings will require mitigation to limit break in noise.

- Break in noise into residential and hotel accommodation in Block A, overlooking Great Ancoats Street, and Block D, overlooking Old Mill Street, has been assessed. To achieve acceptable internal noise levels the following ventilation and glazing combinations are required:
- Mechanical ventilation will be provided for the Great Ancoats Street façade with a glazing unit providing a sound reduction index of 37 dB R_w.
- Mechanical ventilation will be provided for bedrooms along the Old Mill Street façade with a glazing unit providing a sound reduction index of 37 dB R_w.
- Natural background ventilation for living rooms along the Old Mill Street façade will be provided with standard trickle vents and a glazing unit with a minimum sound reduction index of 47 dB dB R_w. Mechanically ventilated living rooms along this façade will require a glazing unit with a sound reduction index of 37 dB R_w.

12.74 Residential and hotel accommodation overlooking the centre of the site will require a glazing unit providing 32 dB R_w sound reduction index to limit break in noise.

12.75 With the mitigation measures outlined above no significant impact of noise and vibration is anticipated and residual impacts will be significant.

Intra-Development Noise

12.76 This section reviews the sources of noise and the new noise sensitive receivers that will be within the proposed development.

Potential Noise Sources

12.77 Potential sources of noise have been noted previously in paragraphs 12.4 to 12.6.

12.78 Noise from fixed plant shall be restricted to 50 dB L_{Aeq} during the day and 45 dB L_{Aeq} at night (measured 1.2 to 1.5 m above the ground surface) within external areas normally accessed by the general public, in order to protect amenity.

12.79 Road traffic within the development will create noise within the development.

12.80 Car parking and deliveries to the hotel and retail units could create noise within the development. This will be most significant where located close alongside residential buildings.

12.81 Patron noise from the A3 use may create noise within the development. This will be most significant where entrances and exits are proposed to the A3 use.

Noise Sensitive Receivers and Potential Impacts

12.82 The potential noise sources listed above are likely to cause disturbance to occupants of the residential accommodation overlooking the centre of the site. These residential apartments will be the principal noise sensitive receivers.

Mitigation

12.83 There are a number of noise producing activities associated with the operation of the development. Mitigation is required to ensure these activities do not impact upon noise sensitive receivers also located within the development.

Mitigation of Car Park and Delivery Noise

12.84 Two 100 mm dense concrete block walls (of density greater than 2000 kg/m^3) between a 50 mm cavity is required to separate the car parking and delivery areas from the residential units. The internal wall of the dwellings should either be wet-plastered to a thickness of 12 mm or comprise of a single, independent 12.5 mm layer of gypsum-based board.

Mitigation of Noise From A3 Use

12.85 Any amplified music within the A3 use will have implications for the sound insulation performance of the party floors and related structural flanking paths. To avoid noise-related complaints or the potential for noise nuisance the sound insulation performance of the dividing floor needs to be as high as reasonably practicable.

12.86 To control noise from the A3 use a two-fold system is proposed. A high base sound insulation performance of the dividing floor combined with control over the sound levels generated within the A3 use.

12.87 To achieve a high base sound insulation performance of the dividing floor a jack-up floor slab system is proposed separating a 300 mm concrete slab and a 100 mm concrete slab with a 100 mm cavity. The two slabs should be fastened with resilient supports. In addition to this, a separate, resiliently isolated, sound-insulating ceiling is proposed in the bar with boxed out columns to prevent structure-borne noise flanking the dividing floor.

12.88 With the above construction sound levels in the bar should be limited to the following levels shown in Figure 12.8 These noise levels are typical of a busy city centre bar.

Figure 12.8: Maximum internal noise levels in the bar area for the jack-up floor construction, dB L_{eq}.

	Octave Band Centre Frequency, Hz							dB(A)
	63	125	250	500	1000	2000	4000	
Internal Noise Level	69	76	78	82	81	78	70	85

12.89 Alternatively, where a quieter A3 use is anticipated, the separating floor construction could be reduced to a 250 mm concrete slab with a separate, resiliently isolated, sound-insulating ceiling in the bar area. In this case sound levels in the bar should be limited to the following levels, shown in Figure 12.9. These noise levels are typical of a smaller bar of between 20 and 30 people with low levels of background music.

Figure 12.9: Maximum internal noise levels in the bar area for the single slab floor construction, dB L_{eq}.

	Octave Band Centre Frequency, Hz							dB(A)
	63	125	250	500	1000	2000	4000	
Internal Noise Level	56	63	65	69	68	65	57	72

12.90 The reduction of sound insulation performance of this floor will limit the flexibility of the A3 use. The jack-up floor construction is recommended where raised noise levels are anticipated in the bar area and may increase the ability to sell / lease the A3 space or increase the price / rate that can be obtained.

12.91 It is essential in either of the above constructions that any penetrations of the sound insulating ceilings and column claddings be carefully sealed. It is also important that the isolation provided by the resiliently hung ceiling is not bridged by services. Loudspeakers within the premises of the bar should also be resiliently mounted.

12.92 Patron noise from the A3 use to external areas should be considered to avoid noise impact on the surrounding residential development. Restricting the bar activities to indoor areas and ensuring sufficient attenuation of noise levels from the bar to the areas outside may be required. This should be agreed by Condition to the Planning Approval.

Mitigation of Lift Noise

12.93 To avoid complaints, the L_{A01} noise levels (measured with a "Fast" sound level meter response) arising from operation of the lift installation including direct sound transmission, breakout noise and re-radiation of structure-borne noise shall be no greater than the following limits:

- 30 dB LA01 in any habitable room (living/dining room, and kitchen where this is part of the living dining area, or bedroom) 1.2 – 1.5 m from the floor and no closer than 1 m to any wall, as a result of lift movement;
- 45 dB LA01 within lift cars over one cycle of operation;
- 50 dB LA01 1.0 m in front of lift doors as a result of their opening and closing; and
- 80 dB LA01 in motor rooms.

12.94 Selection of quiet motors and drive mechanisms will be critical, and a maximum permitted noise level should be included in the specification. Vibration isolation of the lift gear will also be required.

12.95 Messages and sounders at lift landing points can prove particularly irritating to residents. It is recommended that messages are not used, and that any sounders deemed necessary do not give rise to a maximum sound pressure level in excess of 50 dB(A) at any location within the car, lift shaft or landings.

12.96 It is recommended that all noise due to lift operations should not exceed 30 dB L_{A01} inside the residential units. This should be agreed by condition.

Mitigation of Refuse Chute Noise

12.97 The Building Regulations state that a wall separating a habitable room and a refuse chute should have a mass (including any finishes) of at least 1320 kg/m^2. The refuse chute in Block A is grouped with the lift alongside the two-bedroom property throughout all residential floors. A party wall separates the refuse chute primarily from an en-suite bathroom, however, there is also a small, 0.4 m section of party wall with the bedroom. Given that this may cause break-in noise issues to both habitable rooms it is noted that mitigation will be required in the detailed design to acoustically shield habitable rooms to acceptable standards set out in Building Regulations.

12.98 To reduce break-in noise it is also recommended that the chute incorporates:

- A liner to the shaft to carry the rubbish;
- Resilient supports to the liner to reduce structure-borne vibration to the chute structure;
- Supports preferably at floor level; and
- Supports not carried off party walls.

12.99 The above should be agreed with the Building Control Authority.

12.100 Doors to the apartments will have acoustic seals at all edges, and have a surface mass in excess of 25 kg/m^2. Incorrectly installed or damaged seals can significantly reduce the composite sound insulation performance of these doors and, in turn, that of the partition as a whole.

Noise Assessment Summary

Noise and Vibration

12.101 There are a number of noise producing activities associated with operation of both options of the proposed development that fall into three main categories: fixed plant, vehicle movements and occupational noise from buildings. Noise from these and from construction of the development will be controlled to avoid disturbance to local residents within and outside the development.

- Noise from fixed plant will be mitigated through local control.
- Noise from vehicle movements has been assessed and will not provide a significant increase on existing noise levels from traffic at existing noise sensitive receivers.
- Operational hours noise from vehicles moving into, out of and around the car park and delivery areas for occupational and commercial uses has been assessed and will not provide a significant increase on existing noise levels around the site.
- Operation hours of any A3 uses may require control through Conditions to the Planning Approval.
- Construction noise will be mitigated through best practice.

12.102 Overall noise impact from the site can be controlled to acceptable levels through good design and mitigation. Consequently, no residual effects of noise or vibration are anticipated.

Effects of Noise from the Existing Environment on the Proposed Development

12.103 The levels of noise from sources external to the development at the proposed residential and hotel buildings will require mitigation to limit break in noise.

12.104 Break in noise into residential and hotel accommodation in Block A, overlooking Great Ancoats Street, and Block D, overlooking Old Mill Street, has been assessed. To achieve acceptable internal noise levels the following ventilation and glazing combinations are required:

- Mechanical ventilation will be provided for the Great Ancoats Street façade with a glazing unit providing a sound reduction index of 37 dB Rw.
- Mechanical ventilation will be provided for bedrooms along the Old Mill Street façade with a glazing unit providing a sound reduction index of 37 dB Rw.
- Natural background ventilation for living rooms along the Old Mill Street façade will be provided with standard trickle vents and a glazing unit with a minimum sound reduction index of 47 dB dB Rw. Mechanically ventilated living rooms along this façade will require a glazing unit with a sound reduction index of 37 dB Rw.

12.105 Residential and hotel accommodation overlooking the centre of the site will require a glazing unit providing 32 dB R_w sound reduction index to limit break in noise.

12.106 With the mitigation measures outlined above no significant impact of noise and vibration is anticipated.

Intra-Development Noise

12.107 A number of sources of noise have been identified within the proposed development.

12.108 Noise break in from the car park, hotel, A1 and A3 uses to adjacent dwellings has been assessed and wall and floor constructions specified to achieve acceptable internal noise levels within the dwellings.

12.109 Noise from lifts and refuse chutes will be controlled through design.

12.110 Employing the mitigation measures outlined previously, no significant impact of noise and vibration are anticipated.

Summary of Impacts

12.111 The potential impacts, proposed mitigation and residual impact are summarised in the following table, Figure 12.10:

Figure 12.10: Summary of Impacts - Noise and Vibration Activity

	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact	Comment
Construction	Noise from demolition and construction on local noise sensitive receptors.	Negative	Short Term	Moderate Local	Use of Best Practicable Means. Public liaison. Enforcement of noise control measures on contractor. Use of silenced, well maintained plant and noise enclosures and barriers, where necessary. Limiting hours of site working.	Minor Local	
	Vibration from demolition and construction on local residents and listed structures.	Negative	Short Term	Minor Local	Use of Best Practicable Means.	Negligible	
Operation	Increase traffic noise on local residents and other noise sensitive receptors	Negative	Long Term	Negligible	Not required	Negligible	
	Traffic vibration on local residents and buildings	Negative	Long Term	Negligible	Not required	Negligible	
	Patron and commercial noise from the retail units, hotel and A3 use.	Negative	Long Term	Moderate Local	Enforcement of noise control measures through Condition to the Planning Approval or licensing control.	Negligible	
	Vehicle noise from car parking and deliveries.	Negative	Long Term	Negligible	Not required	Negligible	
	Noise emissions from fixed plant on local residents and other noise sensitive receptors	Negative	Long Term	Minor Local	Compliance with criteria by incorporating noise control measures into design of fixed plant	Negligible	

13. Ground Conditions

Introduction

13.1 This Chapter has been prepared by Ove Arup and Partners Ltd. An assessment of the ground contamination of the site has been carried out including a Desk Study and an intrusive Site Investigation. This work has identified the presence of contamination levels on the site at a typical level that which would be expected for this area of Manchester. The ecology survey has also noted the presence of Japanese Knotweed on the site.

13.2 An assessment of the impact of the presence of site contamination and Japanese Knotweed has been carried out as part of the Environmental Impact Assessment to ascertain the implication of this on the development.

13.3 This Chapter identifies and quantifies the impacts of these ground conditions issues on the development. It proposes mitigation recommendations that if incorporated, would reduce or remove these impacts.

13.4 This Chapter has been prepared in advance of the preparation of the Remediation Strategy. Whilst this document sets out the principles of the remediation, the details of the remediation will be set out in the Remediation Strategy. This will be agreed with the Environmental Health Officer (EHO) prior to implementation, and a Validation Report will be prepared and made available to the EHO that will confirm that the Remediation Strategy has been implemented.

13.5 The assessment considers the ground contamination issues for both Options I and II as detailed in Chapter 3.

13.6 The choice of option does not affect the ground contamination and the impacts discussed affect both options equally as the building footprints occupy the same area.

13.7 This Chapter is supported by a Geotechnical Interpretative Report (Appendix 13.1).

Baseline Conditions

Location and Topography

13.8 The site is located on the eastern edge of Manchester City Centre and is centred on National Grid Reference SJ 853 983. The site is bounded by Great Ancoats Street to the west, Old Mill Street to the north, Vesta Street to the east and the Ashton Canal to the south. The eastern half of the site is crossed by the Islington Branch of the Ashton Canal. The site to the west of the Islington Branch is currently mainly vacant land, with fencing and earth mounds on the boundaries. Adjacent to the Islington Branch there is a small depot occupied by British Waterways. The site to the east of the Islington Branch is also vacant land together with mounds of what is possibly demolition material. There are established areas of scrub vegetation over much of the site, particularly to the west of the Islington Branch.

Surrounding Land Use

13.9 The site slopes gently downwards from a level of 49.4mOD in the north eastern corner of the site to a level of 47.2mOD at the western boundary. There is little change in level from north to south. There are locks on the Ashton Canal both immediately to the east of Great Ancoats Street and also just to the east of the site. There is a grassy banks sloping up to the site from the canal towpath at a level of 47.6mOD. Canal water level between these locks is approximately 47.2mOD.

13.10 The site is located within mixed residential and light industrial area (comprising mainly textile manufacture, scrap metal works and vehicle maintenance facilities) to the east of Manchester City Centre. The nearest residential properties are located approximately 200 m north east of the site. Commercial premises in close vicinity to the site include a car servicing facility to the east, and a small retail park to the north of Old Mill Street. The former Ancoats Hospital, now under regeneration as New Islington, Britain's third Millennium Village, is located to the east of Vesta Street.

Site History

13.11 An Envirocheck Report has been obtained for the site. The Envirocheck report indicates that the site lies 500 m north west of a known construction waste landfill site (Palmerston Street / Great Ancoats Street), formerly registered to Peter Birse Ltd, although the license has now been surrendered. Several Local Authority air pollution control consents have granted within the vicinity of the site, including a scrap metal furnace on Jersey Street, respraying of vehicles on Great Ancoats Street and a coppersmiths on Piercy Street.

13.12 The Envirocheck Report also provides copies of the historical Ordnance Survey maps for the site together with environmental information obtained from a number of databases. The historical data has been supplemented by a review of available large scale pre-Ordnance survey maps of this area. A selection of historical maps is presented in Appendix 13.1.

13.13 In summary, the history of the site is as follows:

Pre 1793 map

13.14 Green (1793) indicates that the earliest development of the site took place prior to 1793. This development appears to comprise dwellings and gardens, a possible pond is also shown.

1831 map

13.15 By this date, the Ashton Canal had been constructed and the Islington Branch had been added to provide canal access to land north of the site. A cotton mill was present on the site on the west side of the canal branch. A further branch of the canal extended to the east towards Vesta Street from the main Islington Branch.

1850-1960's maps

13.16 Further development on the site occurred during the latter half of the nineteenth century and there are a number of recorded uses for the buildings on the site.

13.17 To the west of the Islington Branch the site has been used for residential development, a public house (on Great Ancoats Street) and an 'Industrial School' (on Mill Street). Parts of the residential development were demolished in the early 1950's. The Industrial School became a Technical School and then the 'Manchester School of Building'. Land alongside the canal branch is originally described as 'Wharf', later 'Paint Works' and 'Paint Warehouse'.

13.18 To the east of the canal branch, the Engineering Works is initially recorded as 'Spindle Works', later 'Metal Stamping' and 'Toy Balloon Works'.

Post 1960's maps

13.19 Site clearance took place in the 1970's and 1980's with the majority of buildings being demolished. The 'Works' adjacent to Vesta Street remained until the early 1990's. In 1989 the OS map identifies it as 'Oak House'. The existing British Waterways depot was constructed on the west side of the Islington canal basin in the late 1970's when a 'scrap works' was also located on this part of the site. The lock keepers cottage adjacent to the Ashton Canal site is still present

Geology

13.20 The published 1:10,560 Geological Map of the area (Sheet SJ 89 NW) indicates that the site is underlain by Glacial Till, which in turn overlies Sherwood Sandstone. Manchester Marl is present at depth beneath the Sherwood Sandstone. It is expected that Made Ground will be present to varying depths on the site. No indication of the depth to bedrock is provided on the geological map.

Mining

13.21 The site is close to a known coal mining area and coal mining is known to have taken place in the Westphalian D coal measures strata which sub outcrop about 400m to the east of the site, and dip to the west.

13.22 A coal mining search has been conducted in 1994 and reported in the Roscoe report. The report indicates that there are four mined coal seams at 350 and 1100m depth below the site and were last worked in 1961. The workings therefore extend below the permo-triassic units which underlie the site. The Coal Authority state that ground movement from these past workings should by now have ceased. There are no shafts or adits indicated on the site.

Hydrogeology

13.23 The main groundwater table is expected to lie within the Sherwood Sandstone. The published hydrogeological data for the site indicate the groundwater level to be at approximately 29mOD.

13.24 The Environment Agency Groundwater Vulnerability Map for the area (1:100,000 Derbyshire and North Staffordshire, Sheet 17) indicates that the Sherwood Sandstone is a major aquifer. The map shows the aquifer to be overlain by soils of a high potential leachibility. This is a default classification for surface deposits in urban areas where a high degree of variability is likely to be present.

Hydrology

13.25 Data provided on the Environment Agency website indicates that the site is not within the flood plain however the site is located within the Source Protection Zone covering the Strangeways Brewery extraction wells.

13.26 The site is adjacent to the Ashton Canal to the south, and a canal arm bisects the site from north to south, classified as Canal Quality B. The River Medlock runs approximately 600 m south east of the site, and is classified as River Quality E.

13.27 The Envirocheck report contains references to several minor pollution incidents to controlled waters, including a spillage of tracing dye to the Ashton Canal in 1995, but little additional information on the nature of these spills is provided.

13.28 Two water abstractions are listed, one approximately 400 m north east of the site, licensed to British Waterways, and one approximately 400 m south of the site, used for cooling purposes by several industrial premises.

Consultation

13.29 A meeting was held on with the Caroline Dodson the Manchester City Council Environmental Health Officer on 10th June 04. Earlier contact to review the scope of the site investigation was made in Nov 03, and on 22nd Jan 04 when she confirmed her consent to the commencement of the Phase 2 Site Investigation.

Potential Impacts

Conceptual Model

Introduction

13.30 The following sections set out a conceptual model of the site, as recommended in current good practice guidelines [REF DETR Risk assess & CIRIA C552] and the Environmental Protection Part IIA. The model identifies potential sources of contamination (such as those arising from previous industrial uses, waste disposal or spillages), possible receptors (e.g. humans, controlled waters and flora and fauna) and possible contaminant pathways (the ways in which the contamination can come into contact with the receptors e.g. ingestion, vegetation uptake). The purpose of this model is to highlight all potential risks to receptors from both on-site and off-site sources of contamination, and to identify pollutant linkages.

Potential Sources

13.31 The site has been used for a range of industrial activities over the past 300 years, including a cotton mill, balloon manufacturing plant, a number of metal works and a paint works. Potential contaminants associated with these industries include heavy metals, dyes, acids and alkalis, fuels and solvents. Given the age of these industrial works, spillages and on-site disposal are likely to have occurred, and Made Ground deposits across the site may contain elevated levels of contaminants, which may extend to the natural strata below.

13.32 Many phases of demolition have occurred on site, and demolition materials and historic foundations are anticipated, which may include asbestos. There may be areas of infilled basements, which could contain demolition arisings or even ashes or other process wastes. Historical plans show the presence of a public house on the site, which is likely to have included a basement or cellar.

13.33 Also shown on historical plans is a pond feature, later presumed to be infilled. Such features often contain high levels of organic material, which may be a source of methane and carbon dioxide gas. Other potential sources of gas include any areas of gross hydrocarbon contamination.

13.34 In more recent years, British Waterways have used the centre of the site adjacent to the canal arm as a temporary holding facility for materials dredged from the canal. Items such as abandoned cars and other rubbish have been held on a short term basis on the site, and there may have been localised areas of fuel spillages associated with this activity, although much of this area comprises hardstanding.

13.35 The site has been extensively fly tipped with what, from the site walkover, appears to be largely domestic refuse material. This material may have a high organic content, and may be source for the generation of landfill gases. In addition, there may be hazardous materials such as old metal-acid car batteries or fuel cans. Also of note are the large numbers of used syringes on the site, which pose a biological hazard to site users and construction workers.

Off-Site

13.36 The site is located in the centre of a light industrial area, and nearby industrial premises include a textile manufacturers (likely to use dyes and acids as process materials), scrap metal merchants and metal works (potential sources of metal and acid contamination) and various car serving and maintenance facilities (sources of contaminants such as hydrocarbons and degreasing agents). A landfill has also been identified within 500 m of the site boundary, which may be a source of landfill gas and leachate.

Potential Receptors and Pathways

13.37 Potential human exposure to contaminants is feasible through four principal pathways, as defined in the CLEA guidance [CLR 7]:

- Ingestion of soils or dust;
- Dermal contact with soil or dust;
- Outdoor or indoor inhalation of dust and/or vapours;
- Consumption of home grown vegetables, and any soils attached.

13.38 The principal pathways will vary with each contaminant as a result of characteristic chemical properties and potential health effects.

13.39 Receptors at risk include construction workers, staff and residents of the Islington Wharf development and maintenance workers. Exposure will be increased in landscaped or unsurfaced areas, where direct contact is more probable. Given the proposed end-use of the site as residential apartments and commercial units, it is not envisaged that indirect ingestion of contaminants via the consumption of fruit and vegetables grown on the site will occur, as areas of landscaping are likely to be either hard landscaping or controlled planting. There is one area of the development north east of the canal arm that will have private gardens.

13.40 Off-site receptors include residents of the adjacent terraced properties, to the north of the site, who would be at risk from any lateral migration of leachate or gas emanating from the site. The adjacent site, the ex-hospital site, is also currently being redeveloped as the New Islington Millennium Community, with over 1400 new residential properties, gardens, a crèche, a school and sporting facilities. It is also believed that the drinking water for this development is to be provided by a refurbished groundwater well on the site, and therefore any mobile contamination arising from the Islington Wharf site may pose a potential risk to this potential potable water source.

Controlled Waters

13.41 Several surface waters are in the vicinity of the site, with the Ashton Canal immediately to the south, and a canal arm bisecting the site. The River Medlock runs approximately 600 m south east of the site. Two surface water abstractions are listed with 400 m of the site, one approximately 400 m north east of the site, licensed to British Waterways, and one approximately 400 m south of the site, used for cooling purposes by several industrial premises.

13.42 With respect to groundwater, the Sherwood Sandstone is classified as a major aquifer by the Environment Agency, and the site is partially located within the outer catchment of a groundwater Source Protection Zone. If, as previously discussed, a potable water abstraction well is to be constructed on the adjacent site, the groundwater within the sandstone aquifer immediately below the Islington Wharf site would become a very sensitive receptor.

Structures and Services

13.43 Below-ground concrete structures are at risk in areas of elevated sulfates. Gross hydrocarbon contamination can also have an adverse impact on the setting of concrete, which may affect foundation construction and piling.

13.44 Plastic pipe materials are also vulnerable to attack from elevated levels of hydrocarbons, which can potentially lead to contamination of potable water supplies.

13.45 Ground gases generally migrate through areas of high relative permeability or along the length of man-made features such as pipes and backfill since these provide a preferential pathway.

Landscaped Areas

13.46 Planting is at risk from phytotoxic contaminants such as copper, zinc, nickel and boron. The pathway for phytotoxic contaminants is usually via uptake through plant root systems via contact with contaminated groundwater. Hydrocarbons can also adversely affect plant growth.

Methodology and Terms of Reference

Framework for Assessment

13.47 Current UK legislation on contaminated land is governed by Part IIA of the Environmental Protection Act (EPA) 1990, which was retrospectively inserted by Section 57 of the Environment Act 1995 [REF DETR Circular 02/2000].

13.48 The legislation introduces the concept of a "suitable for use" approach to the re-use of contaminated sites, requiring remedial action where unacceptable risks to human health or the environment are identified, considering both the use of the land and its environmental setting, endorsing the principle of site-specific risk assessment.

13.49 The legislation provides a definition of "contaminated land" as:

"any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that -

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or

(b) pollution of controlled waters is being, or is likely to be, caused".

13.50 Further guidance is included within the legislation as to the nature of harm to be classified as significant, and what constitutes the significant possibility of significant harm. In order to prove that significant harm is being caused, a significant pollutant linkage must be established, using a source-pathway-receptor model. This model comprises three elements:

- ***Source*** - the key pollutant hazards associated with the site.
- ***Receptor*** - the key targets at risk from the sources.
- ***Pathway*** - the means by which the contaminant can cause harm to the receptor.

13.51 If a significant pollutant linkage is to be established, all three elements must be present, with a contaminant capable of causing harm, a receptor sensitive to that contaminant and a pathway linking them.

Assessment Approach

13.52 There are two principal types of risk assessment – qualitative and quantitative. Within a qualitative risk assessment, plausible pollutant linkages are determined by development of the source-pathway-receptor (the conceptual) model.

13.53 A quantitative risk assessment involves the estimation of risks via the comparison of representative site concentrations of contaminants with appropriate assessment criteria to identify unacceptable levels of risk. A generic quantitative risk assessment (GQRA) compares site data against generic assessment criteria (i.e. those derived or published by an authoritative body). A detailed quantitative risk assessment (DQRA) involves the derivation of site-specific assessment criteria using an appropriate modelling tool. Risks to human health may be assessed on a site-specific basis using models such as SNIFFER, RISC-Human or RBCA, whilst models to assess risks to controlled waters include the Environment Agency R & D 20 spreadsheets and CONSIM.

13.54 At this stage of the development, a qualitative and generic quantitative risk assessment has been undertaken. The generic assessment criteria adopted for each assessment are discussed fully within each relevant section.

Results of Analysis - Assessment of Impact

Chemical Analysis

Made Ground Deposits

13.55 The chemical results for the soil analysis of the Made Ground deposits on the Islington Wharf site are summarised in Figure 13.1 and presented in Appendix 13.1. This includes the 95th percentile (US95) for each of the contaminants, calculated in accordance with the procedure outline in CLR 7 [REF CLR 7]. Materials were generally shown to be moderately alkaline in nature, with some areas of high lead and hydrocarbons.

13.56 No asbestos was identified during the investigations.

Natural Ground Deposits

13.57 Chemical results for the natural soil deposits (i.e. Glacial Till) encountered beneath the Made Ground are summarised in Figure 13.2.

Initial Human Health Risk Assessment

Introduction

13.58 To fully assess the risks to human health from contaminated soils on the site, it recommended that a detailed quantitative risk assessment (DQRA) be undertaken, to derive site-specific assessment criteria for the development. This assessment could include zoning the site, assessing materials to be used beneath the building footprint and within landscaped areas separately. Soil thresholds within the building footprint area would be considerably less stringent than for the landscaped areas for most non-volatile contaminants.

13.59 A DQRA can also be modified to include all the contaminants of concern for the site. Generic assessment criteria have only been issued by DEFRA for a limited number of contaminants have guideline values have been published to date.

13.60 However, as an initial screen, a generic quantitative risk assessment (GQRA) has been undertaken for the site for those contaminants for which generic assessment criteria are available. In the following sections the assessment criteria selected are discussed, and the chemical analysis results of soil assessed.

Figure 13.1: Soil Chemistry - Made Ground Deposits

Parameter	Unit	No. Samples	Minimum	Maximum	Mean	Standard Deviation	t	US95
Antimony	(mg/kg)	29	0.9	32	5.46	6.39	1.701	7.48
Arsenic	(mg/kg As)	54	4	170	28.45	27.75	1.676	34.78
Asbestos								
Benzene	(mg/kg)	29	0.1	0.1	0.10	0.00	1.701	0.10
Boron (water soluble)	(mg/kg)	54	0.13	4.7	1.29	1.01	1.676	1.52
Cadmium	(mg/kg Cd)	54	0.2	5.6	0.76	0.79	1.676	0.94
Chromium	(mg/kg Cr)	54	1	73	26.90	16.42	1.676	30.65
Chromium VI	(mg/kg Cr)	1	0.31	0.31	0.31			
Cobalt	(mg/kg)	29	0.1	5.7	1.87	2.26	1.701	2.59
Copper	(mg/kg Cu)	54	13	1800	228.37	392.97	1.676	318.00
Cyanide (free)	(mg/kg CN)	30	1	1	1.00	0.00	1.699	1.00
Cyanide (thiocyanate)	(mg/kg CN)	1	1	1	1.00			
Cyanide (total)	(mg/kg CN)	54	0.1	60	4.31	11.29	1.676	6.88
Ethylbenzene	(mg/kg)	29	0.1	0.1	0.10	0.00	1.701	0.10
Lead	(mg/kg Pb)	54	11	11000	586.91	1515.63	1.676	932.58
Mercury	(mg/kg Hg)	54	0.1	2.4	0.47	0.43	1.676	0.57
mp-xylene	(mg/kg)	29	0.1	0.1	0.10	0.00	1.701	0.10
Nickel	(mg/kg Ni)	54	2.5	81	25.56	14.21	1.676	28.80
o-xylene	(mg/kg)	29	0.1	0.1	0.10	0.00	1.701	0.10
PAH (total)	(mg/kg)	44	5	700	55.18	120.21	1.682	85.66
PCBs	(mg/kg)	26	0.01	0.01	0.01	0.00	1.708	0.01
PH		54	7	10.8	8.11	0.75	1.676	8.28
Phenols (monohydric)	(mg/kg)	1	0.3	0.3	0.30			
Phenols (total)	(mg/kg)	44	0.2	5.9	1.22	1.24	1.682	1.53
Selenium	(mg/kg Se)	54	0.1	1.5	0.40	0.26	1.676	0.45
Sulphate (2:1 extract)	(g/l SO_4)	41	0.06	1.656	0.53	0.47	1.684	0.66
Sulphate (total)	(% SO4)	15	0.1	17	1.29	4.35	1.761	3.27

Parameter	Unit	No. Samples	Minimum	Maximum	Mean	Standard Deviation	t	US95
Sulphide	(mg/kg S^{2-})	44	0.2	170	37.36	42.65	1.682	48.17
Sulphur (free)	(mg/kg S)	44	0.5	100	37.15	47.36	1.682	49.16
TEM	(mg/kg TEM)	10	10	3400	760.00	1260.29	1.833	1490.52
Toluene	(mg/kg)	29	0.1	0.1	0.10	0.00	1.701	0.10
Total organic carbon	(mg/kg)	5	14000	30900	23960.00	6767.79	2.132	30412.81
TPH	(mg/kg)	34	20	1600	291.44	401.31	1.693	407.96
Zinc	(mg/kg Zn)	54	26	1200	270.59	263.76	1.676	330.75

Figure 13.2: Soil Chemistry - Natural Ground

Parameter	Unit	No. Samples	Minimum	Maximum	Mean	Standard Deviation	t	US95
Antimony	(mg/kg)	6	1.4	2.8	2.00	0.53	2.015	2.44
Arsenic	(mg/kg As)	11	4.1	8.3	6.78	1.59	1.812	7.65
Benzene	(mg/kg)	6	0.1	0.1	0.10	0.00	2.015	0.10
Boron (water soluble)	(mg/kg)	11	0.1	3.2	0.89	0.96	1.812	1.42
Cadmium	(mg/kg Cd)	11	0.2	0.74	0.38	0.22	1.812	0.49
Chromium	(mg/kg Cr)	11	6.4	37	21.99	13.12	1.812	29.16
Cobalt	(mg/kg)	6	0.1	4.9	1.27	1.91	2.015	2.84
Copper	(mg/kg Cu)	11	16	47	29.09	9.08	1.812	34.05
Cyanide (free)	(mg/kg CN)	6	1	1	1.00	0.00	2.015	1.00
Cyanide (total)	(mg/kg CN)	11	0.1	1	0.59	0.47	1.812	0.85
Ethylbenzene	(mg/kg)	6	0.1	0.1	0.10	0.00	2.015	0.10
Lead	(mg/kg Pb)	11	11	70	31.64	23.20	1.812	44.31
Mercury	(mg/kg Hg)	11	0.1	0.3	0.21	0.10	1.812	0.27
mp-xylene	(mg/kg)	6	0.1	0.1	0.10	0.00	2.015	0.10
Nickel	(mg/kg Ni)	11	1.1	40	21.74	13.16	1.812	28.93
o-xylene	(mg/kg)	6	0.1	0.1	0.10	0.00	2.015	0.10
PAH (total)	(mg/kg)	6	5	66	15.17	24.90	2.015	35.65
PH		11	6.95	8.2	7.61	0.38	1.812	7.82

Parameter	Unit	No. Samples	Minimum	Maximum	Mean	Standard Deviation	t	US95
Phenols (total)	(mg/kg)	6	0.2	0.5	0.25	0.12	2.015	0.35
Selenium	(mg/kg Se)	11	0.1	0.3	0.21	0.10	1.812	0.27
Sulphate (2:1 extract)	(g/l SO_4)	11	0.04	1.092	0.29	0.29	1.812	0.45
Sulphide	(mg/kg S^{2-})	6	10	28	14.67	7.66	2.015	20.97
Sulphur (free)	(mg/kg S)	6	0.5	1	0.58	0.20	2.015	0.75
TEM	(mg/kg TEM)	5	10	100	60.00	39.37	2.132	97.54
Toluene	(mg/kg)	6	0.1	0.1	0.10	0.00	2.015	0.10
TPH	(mg/kg)	6	20	140	47.17	48.62	2.015	87.16
Zinc	(mg/kg Zn)	11	13	85	42.36	22.77	1.812	54.80

Soil Assessment Thresholds - Human Health

13.61 Two main end-uses have been identified for the development - residential accommodation in apartment blocks, and landscaped areas. Both of these end-uses differ from the four standard land-uses identified in the CLEA model:- residential with and without plant uptake, allotments and commercial. The residential end-use identified in CLEA model considers a residential development with a garden. Potential exposure pathways included in this end-use scenario are:

- ingestion of soil and household dust;
- dermal contact with soil and household dust;
- inhalation of fugitive soil and household dust;
- inhalation of indoor and outdoor vapours;
- ingestion of contaminated vegetables or soil attached to vegetables (if vegetables are grown within the garden area);

13.62 No landscaping or public open space end-use is considered with the four CLEA standard end-uses.

13.63 The residential units proposed will be apartment blocks, largely without private, but with some areas of managed soft landscaping and hard landscaped external works. One local area of private gardens north-east of the canal arm will require particular attention in the Remediation Strategy. Residents could be exposed to contaminated soils in soft landscaping areas via:

- ingestion of soil;
- dermal contact with soil;

- inhalation of fugitive soil;
- inhalation of outdoor vapours.

13.64 Within the apartment blocks themselves, the key exposure pathway is via indoor inhalation of soil vapours, as direct contact with soil will be prevented by the ground slab of the building.

13.65 An initial screen of the contamination data has been undertaken. As a conservative approach CLEA soil guideline values (SGVs) for residential developments without plant uptake (i.e. discounting the additional intake of contaminants via the consumption of home grown vegetables for most of the site) have been used as initial screening levels (ISLs) to assess risks to human health in areas of soft landscaping. DEFRA have published SGVs for seven contaminants (arsenic, cadmium, nickel, lead, selenium, chromium and mercury). Generic assessment criteria (GACs) have been derived internally by Arup following the CLEA model [REF CLR 10] for zinc, benzene, benzo(a)pyrene, naphthalene, inorganic cyanide (used to assess total cyanide), and phenol (used to assess total phenols) for the four standard CLEA end-uses. Research reports to support each of the threshold values can be made available to the local authority to support this assessment if required. The residential without plant uptake end-use GACs were used for these parameters.

13.66 The CLEA SGVs and Arup GACs for a commercial/industrial end-use have been used as initial thresholds for materials beneath the building footprint and hard landscaping. These guideline values are considered to be generally conservative, as the commercial end-use still considers ingestion of soil and building dust, dermal contact with soil and building dust, inhalation of fugitive soil and building dust and inhalation of indoor and outdoor vapours. It is therefore likely that any site-specific assessment criteria would be much less stringent than these thresholds for non-volatile contaminants, as ingestion can be discounted as a pathway in this area. For volatile contaminants, the critical receptor for a residential development, a 0 – 6 year old female child, will be more sensitive than the critical receptor for the commercial / industrial end-use, and exposure duration may be longer. It is therefore possible that the site-specific assessment criteria for volatile contaminants may be more conservative than the commercial / industrial SGVS and GACs.

13.67 For other parameters, the initial screening levels (ISLs) are based in the Dutch Intervention Values. These guidelines assume a multi-purpose end-use for any site, which could range from housing to industrial use and take into account ecotoxicology in addition to human toxicology. A further, more detailed risk assessment is required for these parameters, as the Dutch model is based on different toxicological assumptions, soil types and exposure scenarios. However, the values are considered appropriate as a first level of screening for the development prior to completion of a DQRA.

Soil Assessment Results - Human Health

13.68 The full assessment of the soil results in comparison to the initial screening levels (ISLs) are presented in spreadsheet format in Appendix 13.1. Summaries of the results are presented in Figures 13.3 and 13.4.

13.69 In general, natural materials on the site were not in excess of the initial screening levels for landscaping or building footprint areas. Only one exception, a sample from TP15, contained elevated levels of polyaromatic hydrocarbons (PAH).

13.70 Made Ground deposits on the site contained levels of lead, antimony, arsenic, copper, PAH and nickel above the initial screening levels for landscaping, indicating that much of the Made Ground deposits across the site may pose a risk to human health in areas of open landscaping. The initial screening levels for underneath the building footprint were exceeded for copper, lead, nickel and PAH indicating that some areas of the Made Ground may require removal or treatment, although with a further site-specific risk assessment it is anticipated that these levels of contaminants will not pose a risk to human health underneath the building footprint as the ground slab will break the potential pollutant linkage.

Summary of Risks to Human Health

13.71 A site-specific detailed quantitative risk assessment is required to fully assess risks to human health for the proposed development, but the results of a preliminary screening exercise using generic assessment criteria has indicated that Made Ground deposits in the site may be unsuitable for use in open landscaping. Some Made Ground deposits may also be unsuitable to remain beneath the building footprint and treatment or removal may be required.

13.72 Some materials may pose a risk to construction workers, as they are in direct contact with excavated materials. This exposure is short-term, but should be controlled via the implementation of appropriate health and safety measures, such as PPE.

13.73 Risk control measures should be implemented during construction to minimise exposure of the workers and residents and occupiers of adjacent properties to fugitive dust.

Figure 13.3: Summary of Soil Assessment - Landscaping

Parameter	Unit	ISL	Source	No Samples	No. in Excess of ISL
Antimony	(mg/kg)	15	Professional judgement	34	2
Arsenic	(mg/kg As)	20	CLEA Residential no plant uptake	67	10
Asbestos				0	
Benzene	(mg/kg)	2.7	Arup GAC Residential no plant uptake	34	
Boron (water soluble)	(mg/kg)	3	Professional judgement	67	
Cadmium	(mg/kg Cd)	30	CLEA Residential no plant uptake	67	
Chromium	(mg/kg Cr)	130	CLEA Residential no plant uptake	67	
Cobalt	(mg/kg)	240	Dutch Intervention Value	34	
Copper	(mg/kg Cu)	190	Dutch Intervention Value	67	5
Cyanide (free)	(mg/kg CN)	20	Dutch Intervention Value	38	
Cyanide (total)	(mg/kg CN)	136	Arup Residential no plant uptake	67	
Ethylbenzene	(mg/kg)	50	Dutch Intervention Value	34	
Lead	(mg/kg Pb)	450	CLEA Residential no plant uptake	67	7
Mercury	(mg/kg Hg)	15	CLEA Residential no plant uptake	67	
mp-xylene	(mg/kg)	25	Dutch Intervention Value	34	
Nickel	(mg/kg Ni)	75	CLEA Residential no plant uptake	67	1
o-xylene	(mg/kg)	25	Dutch Intervention Value	34	
PAH (total)	(mg/kg)	40	Dutch Intervention Value	52	7
PCBs	(mg/kg)	1	Dutch Intervention Value	26	
pH		5.5-9		67	
Phenols (monohydric)	(mg/kg)	15000	Arup GAC Residential no plant uptake	1	
Phenols (total)	(mg/kg)	15000	Arup GAC Residential no plant uptake	52	
Selenium	(mg/kg Se)	260	CLEA Residential no plant uptake	67	
Toluene	(mg/kg)	130	Dutch Intervention Value	51	
TPH	(mg/kg)	500	Professional Judgement	52	
Zinc	(mg/kg Zn)	10700	Arup GAC Residential no plant uptake	52	

Figure 13.4: Summary of Soil Assessment - Building Footprint and Hardstanding

Parameter	Unit	ISL	Source	No Samples	No. in Excess of ISL
Antimony	(mg/kg)	15	Professional judgement	34	2
Arsenic	(mg/kg As)	500	CLEA Commercial	67	
Asbestos				0	
Benzene	(mg/kg)	15	Arup GAC Commercial	34	
Boron (water soluble)	(mg/kg)	3	Professional judgement	67	
Cadmium	(mg/kg Cd)	1400	CLEA Commercial	67	
Chromium	(mg/kg Cr)	5000	CLEA Commercial	67	
Cobalt	(mg/kg)	240	Dutch Intervention Value	34	
Copper	(mg/kg Cu)	190	Dutch Intervention Value	67	5
Cyanide (free)	(mg/kg CN)	20	Dutch Intervention Value	38	
Cyanide (total)	(mg/kg CN)	13900	Arup GAC Commercial	67	
Ethylbenzene	(mg/kg)	50	Dutch Intervention Value	34	
Lead	(mg/kg Pb)	750	CLEA Commercial	67	4
Mercury	(mg/kg Hg)	480	CLEA Commercial	67	
mp-xylene	(mg/kg)	25	Dutch Intervention Value	34	
Nickel	(mg/kg Ni)	5000	CLEA Commercial	67	
o-xylene	(mg/kg)	25	Dutch Intervention Value	34	
PAH (total)	(mg/kg)	40	Dutch Intervention Value	52	7
PCBs	(mg/kg)	1	Dutch Intervention Value	26	
pH		5.5 - 9.0	Professional judgement	67	
Phenols (monohydric)	(mg/kg)	59000	Arup GAC Commercial	1	
Phenols (total)	(mg/kg)	59000	Arup GAC Commercial	52	
Selenium	(mg/kg Se)	8000	CLEA Commercial	67	
Toluene	(mg/kg)	130	Dutch Intervention Value	51	
TPH	(mg/kg)	5000	Dutch Intervention Value for Mineral Oil	52	
Zinc	(mg/kg Zn)	257000	Arup GAC Commercial	52	

Risks to Controlled Waters

Introduction

13.74 Risks to controlled waters (groundwater and surface waters) are primarily assessed in accordance with the protocol outlined in the Environment Agency R & D 20 publication "Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Resources" [REF R&D 20]. The R & D 20 report provides a tiered approach of risk assessment starting with an initial screen of leachate and groundwater data against drinking water limits or other appropriate threshold values, followed by basic calculations for each contaminant to modify the assessment criteria for site-specific ground conditions if required. If pollution of controlled waters is identified as a key concern, further detailed hydrological or hydrogeological modelling may be required to assess scenarios such as off-site migration of contaminants.

R&D Tier 1 Assessment

13.75 A Tier 1 assessment has been completed using leachate results from the current site investigation. The leachate data can be seen in Appendix 13.1. Values have been assessed against UK drinking water standards or the Dutch Intervention Values for groundwater.

Results

13.76 The leachate quality thresholds (LQT) were exceeded for ammonia, antimony, benzene and lead, indicating that these contaminants may be potentially mobile within some of the Made Ground deposits. Infiltration passing through the Made Ground may therefore generate contaminated leachate.

Summary of Risks to Controlled Waters

13.77 An initial screen of the leachate results from the Made Ground deposits across the site indicate that some of the contaminants may be potentially mobile. The significant thicknesses of Glacial Till below the Made Ground will prevent vertical migration down into the underlying sandstone aquifer, however any lateral migration of perched waters within the Made Ground into the adjacent Ashton Canal, or surface runoff may pose a risk to surface waters. The proposed development will reduce infiltration across the site due to the increase in hardstanding, but care will need to be taken in areas of soft landscaping that surface materials do not pose a risk in terms of the generation of contaminated surface run-off. It is also believed that the canal is lined with puddle clay and therefore this would greatly reduce the risk of the infiltration of contaminated ground water in to the canal.

13.78 A more detailed assessment of the risks to adjacent Ashton Canal is required as part of the full environmental risk assessment to be undertaken for the site, in particular addressing the likelihood of lateral migration of perched waters in the Made Ground. It is noted however that other remediation strategies along the Ashton Canal have demonstrated that there has been no inflows of the localised perched water tables into the canal. More commonly any leakage through the canal lining has been in the other direction with local outflows from the canal into the surrounding ground.

13.79 It is also recommended that a foundation works risk assessment be undertaken to determine whether the adoption of piled foundations pose any risk to the underlying sandstone aquifer, particularly given the possible construction of a potable water source on the adjacent New Islington site. Such an assessment should assess the suitability of foundation remediation options in terms of both buildability and environmental risk. Possible foundation techniques should be assessed against 'possible pollution scenarios' in accordance with the Environment Agency's guidance document 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention' (NC/99/73).

Risks to Structures

13.80 A Sulphate assessment will need to be carried out to determine the design of concrete in contact with the ground. However the test results suggest that this is unlikely to be a driver for additional ground treatment or disposal.

Risks to Services

13.81 The soil chemical data has been compared with the Water Regulations Advisory Service [45] (WRAS) material selection threshold levels. The thresholds were exceeded for arsenic, cadmium, mercury, lead, phenols, TPH and PAH. It is therefore likely that special consideration of pipe materials will be required, and/or protective measures such as the use of trenches backfilled with clean imported fill material.

Risks to Landscaping

13.82 The results of the chemical analyses indicate that elevated levels of phytotoxic elements such as copper and nickel are present. It is therefore recommended that the chemical data should be reviewed by the landscape architect where soft landscaping at ground level is planned, as this can be dependent upon the planting strategy and plant species adopted.

13.83 Quality criteria should be set for imported topsoil, to ensure that this material does not pose a risk to planting.

Initial Gas Assessment

Sources and Pathways

13.84 Material with organic or biodegradable content e.g. organic clays, coal seams and domestic refuse, will have the potential for the generation of the landfill gases, methane, carbon dioxide and hydrogen sulphide (H_2S) and for the displacement of oxygen, with associated hazards of explosion or asphyxiation.

13.85 Potential sources of gas that have been identified on site are Made Ground deposits, fly tipping and any hydrocarbon contamination across the site. Gas may migrate through the permeable deposits on site; either through the Made Ground, or along service trenches or bedding.

Receptors

13.86 Potential receptors include humans and buildings. If methane or carbon dioxide collects within an enclosed area, it can cause asphyxiation and explosion, therefore causing death or injury to humans and destruction of the building.

Figure 13.5 Hazard Concentrations of Gas

Gas	Hazard Concentrations	
	Toxicity of asphyxiation % by volume in air[1]	Explosive limits in air % by volume in air (LEL)[2] (UEL)[3]
Methane	30	5.0 - 15.0
Carbon Dioxide	0.5	n/a
Carbon Monoxide	0.005	12.5 - 74.2
Hydrogen Sulphide	0.001	4.3 - 45.5
Hydrogen	30	4.0 - 74.0

[1] 8 hour long-term exposure limit (HSE, 1991)

[2] lower explosive limit

[3] upper explosive limit

Table taken from CIRIA R149 (1996).

Monitoring Data

13.87 Gas monitoring has been undertaken in both deep and shallow installations across the site, and results are included in Appendix 13.1. Monitoring of the deep installations within the sand and gravel layers recorded concentration of carbon dioxide gas up to 13% (by volume) at total gas flow rates up to 30 l/h. Monitoring of the shallow installations recorded concentrations of carbon dioxide gas up to 4.9% (by volume) and total gas flow rates of 0.3 l/h.

13.88 The maximum level of methane recorded during monitoring of both the shallow and deep installations was 0.1% (by volume).

Initial Data Assessment

13.89 According to CIRIA R149 gas protection measures are required when the concentration of methane and carbon dioxide exceed 1% and 1.5% by volume in air respectively. In most natural UK soils methane concentrations fall well below 0.1%. The CIRIA R149 Report has been used to preliminarily assess the gas regime at the site. The criteria used take into consideration the maximum gas concentration recorded and do not consider gas flow rates, and therefore it is often deemed to provide unnecessarily high classifications.

13.90 Elevated levels of carbon dioxide (up to 13% concentration) were measured at depth in the sand and gravel aquifer, but monitoring of the shallow wells indicates that concentrations within the Made Ground deposits on the site are lower, with the maximum concentration of carbon dioxide recorded as 4.9%, typical of many Made Ground deposits. Comparison of the shallow gas monitoring results with CIRIA R149 classifies the site as Characteristic Situation 2, which requires ventilation of confined spaces within the building, installation of a well constructed ground slab, installation of a low permeability gas membrane and minimum penetration of the ground slab by services.

Summary of Gas Risks

13.91 The gas monitoring programme on the site has recorded high gas flow rates and carbon dioxide concentrations at depth within the sand and gravel layers, but shallow gas monitoring has shown that these flow rates and concentrations are not detected in the Made Ground deposits across the site. It is likely that the significant thicknesses of Glacial Till across the site are acting as a barrier to gas migration.

13.92 Slightly elevated levels of carbon dioxide gas were detected within the Made Ground deposits, and appropriate gas protection measures will be required within the final development to address this risk.

Proposed Mitigation

Issues Requiring Mitigation

13.93 In general terms the objectives of any remediation works proposed are to ensure the site is 'suitable for use' in accordance with Part IIA of the Environmental Protection Act, i.e. contamination remaining on site:

(i) Does not present a significant risk of significant harm to identified receptors.

(ii) Does not cause significant pollution of controlled waters.

13.94 The environmental risk assessment identified the following potential pollutant linkages that will be addressed during remediation and enabling works on the site:

Phase	Source	Pathway	Receptor
Construction	Fugitive dust	Inhalation and ingestion	Adjacent residents, construction workers
Construction	Made Ground deposits	Ingestion, dermal contact, inhalation of contaminant vapours	Construction workers
Construction	Made Ground deposits and perched waters	Surface water runoff Lateral migration	Ashton Canal
Construction & Post Construction	Made Ground deposits and perched waters	Vertical migration of leachate and perched groundwater	Sandstone aquifer
Construction & Post Construction	Ground gas	Migration	Residents and site users, construction workers
Post Construction	Made Ground	Vapour and leachates	Services
Post Construction	Topsoil and surface landscaping materials	Ingestion, dermal contact, inhalation of contaminant vapours, plant uptake	Maintenance workers, landscaping

13.95 In addition it is necessary for mitigation measures to be taken to address the presence of Japanese Knotweed on the site.

13.96 All of these mitigation measures will need to be addressed in the Remediation Strategy to be agreed with the Local Planning Authority and secured through a planning condition. An outline Remediation Strategy is set out below.

Outline Remediation Strategy

Earthworks Strategy

13.97 A programme of earthworks will be required to form an earthworks profile suitable for the proposed development levels and to treat geotechnically and chemically unsuitable materials. A preliminary assessment has been made to determine approximate quantities and materials type to be excavated. The earthworks assessment and estimation of quantities is based on a comparison of the ground surface derived from the topographical survey and the formation level assumed to be 0.5m below the slab levels indicated on the Architects drawing No GSD-02-101. This is to allow for the construction thickness of the ground floor slab and car park with granular stone below. Additional allowance has been made for dealing with soft and hard areas below the buildings outside the Podium areas to allow the use of a ground bearing slab. A summary of the estimated earthworks quantities is given below:

Item	Phase 1	Phase 2	Phase 3	Total
Excavation	3,200	5,150	4,000	12,350
Fill	3,150	2,000	900	6,050
Off Site Disposal	2,200	3,150	2,400	7,750
Process On site for re use	1,000	2,000	1,800	4,800
Import of granular fill	2,150	0	0	2,150

13.98 The earthworks assessment indicates that there will be a net surplus of excavated arisings which will require disposal from site. Also it is estimated that about 2,150m³ of imported granular fill will be required for the Phase 1 area. There is significantly more cut than fill required in the Phase 2 and 3 areas and it is assumed that the majority of the fill requirement for these phases can be sourced from the excavated arisings. It is assumed that each phase will be developed separately and therefore there will be little opportunity to share and balance materials across each phase of development.

13.99 The preliminary assessment indicates that excavation will predominantly be in Made Ground deposits with Glacial Till locally encountered in the Phase 2 and 3 areas. The Made Ground deposits, are variable in composition and consistency and generally will be unsuitable for direct reuse as engineering fill. A proportion of these materials including hard materials should be suitable for processing by screening and crushing to generate suitable granular fill for use on the site. There is also a small quantity of Glacial Till which could also be used as general fill on site.

13.100 The following construction sequence will be followed to help maximise the reuse potential of the excavated arisings.

- Site strip - Remove vegetated upper of approximately 100mm across the site. To included removal of needles and syringes.
- Removal of Japanese Knotweed - excavation is likely to be required up to a 7m radius and to 2m depth at each stand location, where spraying has not been successful in eliminating all traces of the plant.
- Removal of identified contamination hotspots.
- Cut and fill to form earthworks platform at structural slab level less 0.5m.
- Process suitable excavated arising by screening and crushing to form granular fill for reuse on site.
- Remove soft and hard areas below building footprint and car park areas. Backfill with granular fill.
- Place granular fill to underside of ground floor slab and car park.
- Remove unsuitable and surplus arisings from site.

13.101 It is suggested that a range of +/- 10 % is given on the bulk earthworks quantities and a range of up to 20% on the individual volumes from the Made Ground components to reflect the typical variability. The estimated quantities could vary beyond these ranges following the detailed risk assessments and the development and approval of a remediation strategy for the site.

13.102 The earthworks activities are highly influenced by seasonal conditions and periods of extended rain could result in further degradation of materials and decrease in their reuse potential. Conversely, periods of very dry weather combined with the already low natural moisture content of the clay may mean that additional wetting down is required prior to compaction. Ideally the earthworks should be carried out between April and October to minimise this risk.

13.103 The site remediation targets will govern the classification of material which is unsuitable for use on account of its chemical properties. These targets will need to be developed following detailed risk assessment. Any changes to the preliminary generic targets assumed may alter the quantity of U2 material present.

13.104 There will be further materials generated from site in the form of substructure excavations, pad excavations and pile arisings which have not been included in the above calculations. It is difficult to retain these materials for use on site and at this stage an allowance should be made for additional off-site disposal.

Private Gardens

13.105 A small area of the site immediately north east of the canal arm will be used for private gardens. This will be addressed in the final Remediation Strategy, but further excavation of Made Ground may be required in this area. However the quantities will not be significant in the context of the overall Remediation Strategy.

Hotspot Removal

13.106 Known areas of significantly elevated contaminants will be excavated to the proven depth of contamination or the top of glacial till, and then chased out by visual or olfactory means where feasible, supervised by the site chemist. This could be assisted by use of a PID meter for hydrocarbon contamination. Validation samples will be taken for chemical analysis from excavations to ensure that all contamination has been removed. Five samples would normally be anticipated, four from the sides of the excavation and one from the base.

13.107 Depth of excavations will be limited to the glacial till, as this stratum is assumed to be 'clean'. Such areas will however be marked on the validation drawing.

13.108 If any potentially significantly contaminated materials, in addition to those identified from the investigations to date, are uncovered during any phase of the earthworks they will either be removed for off site disposal, or stockpiled pending analysis to determine their suitability to remain on site.

Imported Fill Materials

13.109 Imported fill materials on the site should comply with the chemical criteria to be derived as part of the detailed remediation strategy.

13.110 Imported recycled fill materials should be produced in compliance with the Quality Protocol for the production of aggregates from inert waste, and appropriate documentation (as detailed in the protocol) must be provided for all materials.

Topsoil

13.111 Landscaped areas will require an appropriate combined thickness of sub/top soil and trees will be planted in appropriate trenches or pits.

13.112 Copies of the environmental risk assessment, remediation strategy and chemical testing data will be issued to the landscape architect prior to detailed design of the landscaping works.

13.113 The chemical quality criteria for topsoil should be defined by the landscape architect appointed for the development, to ensure healthy plant growth. These criteria must not exceed the imported fill criteria.

Fly Tipping

13.114 Site visits indicate the presence of fly-tipped materials which appear to be above the levels indicated on the topographic survey. These will need to be quantified and removed from site prior to commencement of the main enabling works.

Syringes

13.115 The site contains high concentrations of needles/syringes associated with recreational drug usage. Once the site has been secured, a thorough search and removal process will need to be undertaken as these pose a high risk to construction workers.

Japanese Knotweed

13.116 An initial programme of spraying of the known stands of Japanese Knotweed commenced in Autumn 2004. The purpose of this was to :

- Control the growth of the stands to limit their extent should it be necessary for them to be excavated out.
- Where sufficient time permits, to serve at the start of a programme of controlled spraying to eradicate some of the stands.

13.117 Whether the programme of spraying will be sufficient in itself to completely eradicate the stands prior to construction activities starting will be a function of the construction programme. Should plants not be eradicated prior to construction then excavation is likely to be required up to a 7m radius and to 2m depth at each stand location to ensure removal of all root material.

Construction Method Statement

13.118 Prior to commencement of the site enabling works, including the remediation works, the Contractor appointed will be required to submit a detailed Construction Method Statement to include proposals for the health and safety of all site staff and the storage, treatment and disposal of any excavated material and groundwater from the site. This will ensure that all works are carried out in accordance with the Construction (Design and Management) Regulations 1994, together with all relevant health and safety legislation.

13.119 All staff working on the site will be made aware of the potential hazards from any residual or unidentified contamination, including asbestos, and the procedures to be followed if any such material is uncovered during later stages of the development works.

13.120 As discussed previously, the statement should also include details of all dust control measures to be implemented for the works.

Conclusions and Residual Impacts

13.121 The site will be remediated to ensure the site is 'suitable for use' in accordance with Part IIA of the Environmental Protection Act, such that contamination remaining on site:

(i) Does not present a significant risk of significant harm to identified receptors.

(ii) Does not cause significant pollution of controlled waters.

13.122 An outline Remediation Strategy is set out in this Chapter. The detailed Remediation Strategy will be prepared and submitted to the Manchester City Council Environmental Health Officer for approval prior to the commencement of construction work on the site. This will be achieved formally through a planning condition.

Summary of Impacts

13.123 The potential impacts, proposed mitigation and residual impact are summarised in the following table, Figure 13.6. In summary, residual impacts will not be significant if measures set out in the Remediation Strategy are implemented as advised.

Figure 13.6: Summary of Impacts

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact	Comment
Construction	Inhalation and ingestion by humans of fugitive dust	Negative	Short Term	Medium	Remediation Strategy (RS) and Construction Method Statement (CMS)	Low	Measures in RS to remove harmful levels in soil, and CMS to minimise dust
Construction and Development	Ingestion, dermal contact, and inhalation of Contaminated Vapour by humans	Negative	Short term (construction workers) Long Term (residents and maintenance staff	Medium	Remediation Strategy (RS)	Low	Measures in RS to remove harmful levels in soil.
Development	Pollution of Surface Waters	Negative	Long Term	Medium	Remediation Strategy (RS)	Low	Measures in RS to remove harmful levels of leachate in soil.
Development	Pollution of Aquifer	Negative	Long Term	Medium	Remediation Strategy (RS)	Low	Measures in RS to remove harmful levels of leachate in soil.
Construction and Development	Spread of Invasive Plant (Japanese Knotweed)	Negative	Long Term	Medium	Advance spraying and removal	Low	Removal by controlled excavation and disposal or spraying.
Development	Accumulation of Ground Gas in building	Negative	Long Term	High	Remediation Strategy (RS) and Gas measures as per CIRIA R149	Low	RS to reduce gasing materials, and R149 measures to control in buildings.

14. Flood Risk Assessment

Introduction

14.1 This Chapter has been prepared by Ove Arup and Partners Ltd. An assessment of the flood risk to the Islington Wharf site has been carried out as part of the Environmental Impact Assessment to ascertain if the proposed development would be at risk of flooding and if so, what level of risk could be expected.

14.2 This Chapter aims to identify and quantify any potential sources of flooding that could affect the Islington Wharf development. It proposes mitigation recommendations that if incorporated, would reduce or remove these risks.

14.3 The assessment considers the flood risk for both Options I and II as set out in Chapter 3.

14.4 The choice of option does not affect the flood risk and the impacts discussed affect both options equally as the building footprints occupy the same area.

14.5 A meeting was held on site with British Waterways (10 November 2004) to discuss the potential flood risk posed by the canal.

14.6 Discussions have been held with United Utilities (8 April 2004) to discuss the connection of the site drainage to the existing sewer network on Old Mill Street.

Baseline Conditions

14.7 There is no known history of flooding at the site. The provision of the development will not change the baseline condition with relation to the flood risk as it will not alter the likelihood of the site being flooding from external sources.

Potential Impacts

14.8 Flooding of the site would have several negative impacts including damage to the fabric of the buildings themselves, damage to personal belongings, long-term economic loss of business, nuisance, stress and in an extreme situations, loss of life. Areas used for basement car parking would be particularly venerable and could fill with water.

Methodology and Terms of Reference

14.9 This assessment has been made in accordance two key documents.

- **ODPM 2001**, Planning Policy Guidance 25 (PPG25) - Development and Flood Risk.
- **CIRIA 2004**, Report C624 - Development and Flood Risk - guidance for the construction industry

14.10 The following potential mechanisms of flooding have been evaluated and are summarised below:

- Fluvial;
- Coastal;
- Estuarial (tidal);
- Groundwater;
- Overland flow;
- Drainage systems;
- Canal;
- Infrastructure failure.

Results of Analysis - Assessment of Impacts

Fluvial, Coastal and tidal

14.11 The River Medlock is the closest watercourse to the site, located approximately 500m south of the development. The Environment Agency Flood Risk Map has been inspected to see if the site has been identified at risk of flooding (Figure 14.1). This has confirmed the site is not within the zone classified as 'at risk of flooding'. Further detail contained within the map estimates the site to be at little or no risk from flooding at ≤ 0.1% chance of flooding in any year (≤1:1000yrs). Coastal and tidal flooding does not pose a risk to the site due to its inland location.

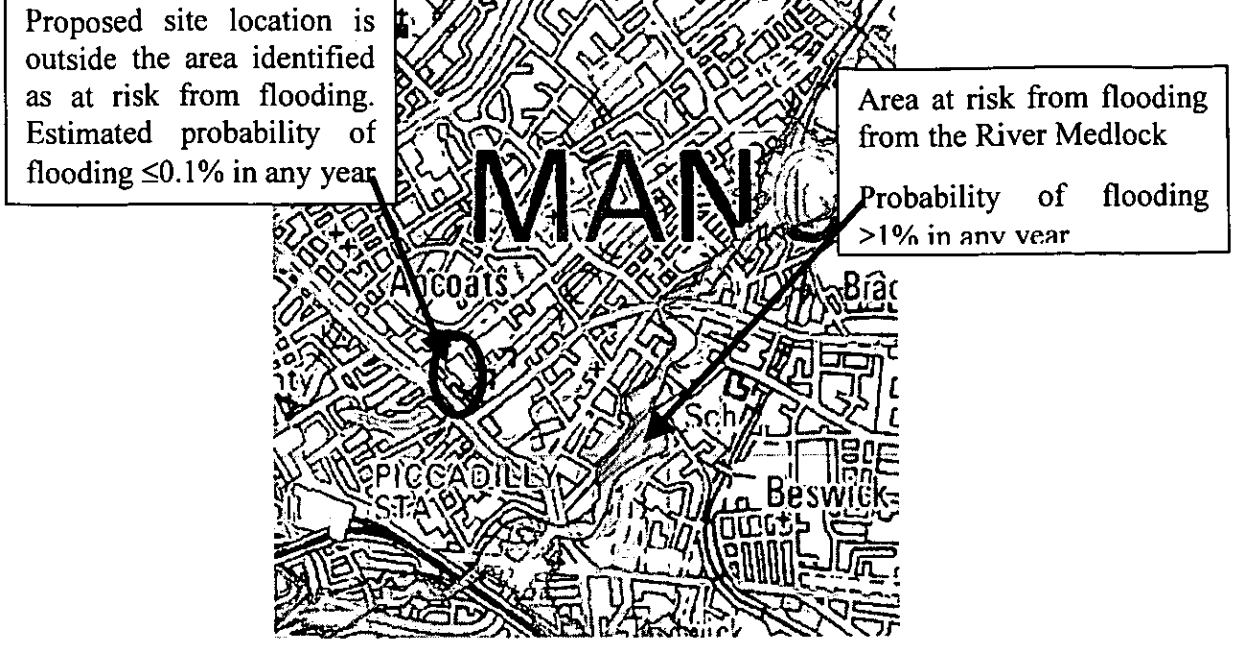


Figure 14.1 - Extract from the Environment Agency Flood Risk Map, November 2004. The site area is shown in red.

14.12 The Environment Agency flood map is used in the planning process and the national planning policy 'PPG25 – Development and Flood Risk' states that if development is sought in areas at risk of flooding (as defined thy the Environment Agency Map), then a flood risk assessment appropriate to the scale and nature of the development and the risk should be provided with any application. As stated in the PPG25 guidelines, there would be no such requirement for this site as it is within the 'little or no risk' zone, for which PPG25 states that no planning constraints due to river, tidal or coastal flooding are appropriate.

14.13 *Summary - the site is not at risk of flooding from fluvial, coastal or tidal sources.*

Groundwater

14.14 Recent site investigation works have been undertaken as part of the Islington Wharf design work. This work indicated that typically, the site consists of a generally granular made ground layer down to typically between 1 and 4m bgl (average 1.5m), a glacial clay layer below this down to approximately 16 to 20m bgl, and sandy gravel strata below this which extends as deep as 40m on to a sandstone rockhead.

14.15 The site investigation work also included the installation of 13 standpipes, both at shallow depth (approx 5m) and deeper (25m +) to facilitate the monitoring of ground water levels. Monitoring of these installations indicated that the main ground water table was within the first few meters of the gravel layer, below the clay. However, pockets of water were encountered during the construction of about 25% of the boreholes and trial pits. These were primarily within the made ground deposits, above the clay layer. These were found to be non-continuous over the site and are likely to be static perched water tables sitting in localised low spots of the clay layer, or inside partially removed former basement substructures. There is a possibility that these pockets of water may seep in to the excavations during the construction phase. However, as the main water table sits approximately 15m below the proposed building foundation level (including any lower level car parking), it is very unlikely, even taking in to account seasonal variations, that this will lead to flooding of the site. It should also be noted that the new development will reduce the overall permeability of the area and the run-off will be drained to either sewer or the canal by new drainage infrastructure.

14.16 *Summary - the site is not at risk of flooding from elevated groundwater levels.*

Overland Flow

14.17 The threat from overland flow flooding is of particular concern in areas adjacent to steep hillsides or a road when the site of interest is at a natural low spot and is therefore the route for excessive surface water runoff to drain. The Islington Wharf Development site is bounded on its west, north and east sides by road and its south side by the Ashton Canal. The flood risk posed by the canal is discussed separately below.

14.18 A review of the ground levels in and around the existing site and of the proposed buildings concludes the following:

- The roads to the west, north and east of the site fall in either a northerly or northwesterly direction (away from the site) and runoff associated with the highway should be contained by the local highway drainage. Only at the points where the canal crosses beneath Great Ancoats Street and Old Mill Street is the road level significantly above the development ground level.
- In an extreme rainfall event where the capacity of the road drainage was exceeded, excess surface water would drain away from the site. The road level at the northwest corner of the site is approximately 45.2mAOD and slopes in a northwest direction.
- The development site would not be below the surrounding boundary ground/road levels and as such, would not be a localised low spot.

- The proposed street level for the development varies through each block but typically falls in a northwesterly direction from 49.5mAOD in the southeast corner to 46.5mAOD in the northwest. The runoff from the site will be designed such that the majority of excess surface water is discharged to the United Utilities sewers in Old Mill Street with the possibility of small areas of land discharging to the canal. In either case, the drainage will be designed to cope adequately with surface water runoff from the site to an accepted design standard.

14.19 *Summary - the site is not at risk of flooding from overland flow / surface water runoff.*

Drainage systems

Flood Records

14.20 United Utilities were contacted to see whether any of the existing sewers or drainage adjacent to the site have a history of flooding. United Utilities refused to confirm if there had been any reported incidents or if any of the nearby properties were on the DG5 register (this is a register of properties at risk from flooding from water company sewers). However, no reported incidents of sewer flooding were identified during the Environmental Impact Assessment Scoping Study consultations made with the local planning authority. There is currently no knowledge of drainage system flooding at the site however it may be possible to confirm this via access to the DG5 register once a planning application has been lodged.

Connection of new drainage infrastructure

14.21 United Utilities have confirmed that there is sufficient capacity within the existing sewer network to allow connection of the new developments infrastructure at Old Mill Street.

14.22 *Summary - There is no evidence that the site is at risk from sewer flooding. Permission to access the DG5 register to confirm this has been denied by United Utilities.*

Canal and/or Infrastructure Failure

14.23 The Ashton Canal runs along the southern boundary of the development site. There are three locks within a 200m (approx) stretch of canal between Great Ancoats Street and Kirby Street. They are referred to as Lock No. 1 (immediately upstream of Great Ancoats Street adjacent to the western end of the site), Lock No. 2 (just upstream of the Lock Keeper's cottage) and Lock No. 3 (located approximately half way between Vesta Street and Kirby Street).

14.24 The canal flows in a west to east direction and in Pound 1-2 (between Lock 1 and Lock 2), there is a branch called the Islington Wharf branch. Downstream of the Great Ancoats Street, the Ashton Canal joins the Rochdale Canal before passing through Manchester.

14.25 The Ashton Canal receives all of its water from the Huddersfield Narrow Canal and the Peak Forest Canal at the junction of the three canals at Portland Basin in Ashton. There are no other feed points on the Ashton Canal.

14.26 There is an emergency overflow that can release water from Pound 3-4 in to the River Medlock, located near to the Manchester Stadium area.

14.27 The canal network is owned and maintained by British Waterways who hold a joint interest in the ISIS Islington Wharf development.

14.28 Pounds 2-3 and 3-4 are elevated above the development site and the risk of canal flooding has been evaluated. A review of the ground, canal and lock levels has also been made and key flooding scenarios considered.

14.29 A technical summary contains the key assumptions and figures relating to the risk posed by the canal. This is contained within Appendix 14.1.

Mechanisms of flooding

14.30 Several mechanisms of canal flooding have been considered but from a review of the ground levels at site, there are two conditions, which if occurred, would flood the site.

A. Overtopping of the Islington Wharf Pound (1-2) resulting in water flowing in a north-westerly direction, which would flood the site.

B. Overtopping of Pound 2-3 which may cause water to flow around the back of the Lock Keeper's cottage and enter the site around the Vesta Street area.

Features of the canal to control flooding

14.31 There are several safety features that would prevent or limit these pounds from overtopping.

The canal freeboard

14.32 The weir level of the downstream bye-wash controls the normal water level in the canal. Freeboard is the difference between top of coping level (top of canal wall) and normal water level. It is the distance the water would need to rise by before causing flooding. Typically on a canal system, this is in the order of 300mm. A canal's water depth must be maintained at least 3ft (915mm) to maintain navigability. The freeboard in this area of the Ashton canal is :

Pound 1-2 = 450mm

Pound 2-3 = 450mm

Pound 3-4 = 800mm-1000mm (estimated)

14.33 From an assessment of the plan area of the Islington Wharf Pound, the canal spare capacity between Locks 1 and 4 has been estimated as:

Pound 1-2 ≈ 1,000m³

Pound 2-3 ≈ 1,000m³

Pound 3-4 ≈ 12,240m³

14.34 This is considered sufficient to be able to cope with localised runoff from storm events. Once the spare capacity of Pound 1-2 is mobilised by inflowing water, the flow through the bye-wash at Lock 1 would increase up to an estimated rate of 0.6m³/s at canal full.

Gate configuration

14.35 There are two gates at each lock and in order for a catastrophic failure, both gates would need to either fail or be opened instantaneously. The opening direction of the gates is such that the flow of water through the lock drags the gates closed. It is also very difficult to open the gate against a head of water, i.e. without water levels on wither side of the gates being equal.

Asset Maintenance

14.36 British Waterways operate an asset inspection programme and gates are typically replaced every 15-20 years.

Call out procedure

14.37 British Waterways operate an emergency call out procedure that is resourced at all times. It is estimated it would take 1 hour from call out for a British Waterways operative and gang to arrive at an incident.

Anecdotal evidence of flooding

14.38 There is no history of the Ashton Canal flooding from pounds 1-2 or 2-3. However, there have been incidents of the canal towpath flooding on the left bank at the upstream end of Pound 3-4 (near the Manchester Stadium). It is thought that this is due to the limited capacity of the bye-wash at Lock 3 and the long length of the Pound. The catchment draining to Pound 3-4 has been heavily urbanised since the original construction of the canal. This is approximately 1.3km upstream of the site and would not affect the Islington Wharf Development.

Canal Flooding Scenarios

14.39 From discussions with the British Waterways Engineer responsible for the maintenance of this section of canal and from a review of how the canal operates, there are three potential scenarios that could cause flooding at the site.

Scenario 1 - Instantaneous failure of both gates at Lock 2.

14.40 It is estimated that 3000m³ of water would be released in to the Islington Wharf pound. 1000m³ of this would be stored within the canals freeboard and the remaining 2000m³ would either pass through the bye-wash and over the gates of Lock 1, or flood the site (or most likely a combination of the two). It is estimated that the capacity of the bye-wash and lock is up to 0.7m³/s (with gates closed at canal full level) and as such, it which would take an estimated 1-hour for this water to pass down to the Rochdale Canal. Assuming all the water displaced entered site (worst case), this is equivalent to 150mm of water across the whole site.

14.41 There is a very low likelihood of this happening, as it would require both gates to fail at once.

Scenario 2 - Instantaneous failure of both gates at Lock 3.

14.42 If gate failure occurred at Lock 3, this would cause more flooding than under Scenario 1 due to the large distance between Locks 3 and 4 (estimated at 1275m) resulting in up to 26,000m³ of water being released in to Pounds 2-3 and then 1-2. Lock 1 would be unable to pass such a volume downstream to the Rochdale Canal (this would take an estimated 12 hours) and the local area would be flooded, including the Islington Wharf site. However, this is very unlikely to occur, as it would require both gates to fail at once. This risk is further reduced as British Waterways are currently renewing the gates at Lock 3.

Scenario 3 -Vandalism at Lock 2 (or 3) by opening of paddles to both sets of doors.

14.43 This would allow the pound to drain through to Islington Wharf but at a much slower rate than for gate failure. From a consideration of the time taken to fill Lock 2, and an estimate of the outflow capacity of the bye-wash and lock at Lock 1 (when gates remain closed) of 0.7m³/s, the net inflow to Pound 1-2 is estimated at 0.7m³/s. Thus, it would take 25 minutes before the available freeboard at Islington Wharf was used up and the site began to flood. As for Scenario 1, the average depth of flooding across the site is estimated at up to 150mm however flooding would occur at a slower rate. British Waterways guard against such vandalism by the provision of a key system required to open the lock paddles. Again, this is unlikely to occur and there have been very few incidents across the country of this happening. However, out of all the scenarios considered, this is the most likely to occur but it does have the lowest consequence of all scenarios considered due to a slower release rate of the water.

Summary of Canal Flood Risk

14.44 Catastrophic gates failure at either Lock 2 or Lock 3 would cause flooding of the Islington Wharf Development but it would require the failure of both gates to either lock to occur instantaneously. This is unlikely to happen as the Aston Canal is operated and maintained by British Waterways who operate a regular inspection and renewal programme. If a failure was in the form of a more gradual release, the increased inflow to the Islington Wharf Pound would then be passed downstream via the bye-wash at Lock 1, but a more substantial release could cause canal water levels to exceed the copping level.

14.45 A more likely scenario to occur is that of vandalism where the Lock Paddles to either Lock 2 or 3 were deliberately opened (again at both gates). This may cause water levels to exceed the copping level potentially causing flooding of the Islington Wharf. This is guarded against by the provision of a lock and key system used to open the paddles.

14.46 *Summary - It is possible to create scenarios where the canal water overtops the copping. The relative levels of the locks and the development mean that such an overtopping does pose a risk of water entering the development, particularly the basement of Block E.*

Proposed Mitigation

14.47 The following mitigation measures will be included within the design of the development to lower the risk of flooding.

Information

14.48 The British Waterways emergency call out number will be given to the Islington Wharf residents and advertised in main areas of the buildings.

Re-profiling ground levels

14.49 Localised raising of ground levels in the area adjacent to the Lock Keeper's cottage will be considered to prevent any water that overtopped from Pound 2-3 from reaching the site. Providing a raised area between Vesta Street and the Lock Keeper's cottage would encourage escaping water to run back in to the canal at Pound 1-2. From examining the ground levels in this area, some escaping water would already reach Pound 1-2 but this could be encouraged further by undertaking a small amount of re-profiling. This would be of particular benefit in this location, as the block on the eastern side of the site would have basement car parking situated below ground level.

Openings in Block E basement

14.50 Ground level openings possible at the south eastern side of the basement car park in Block E will be raised to a minimum of 150mm above ground level or avoided if possible.

Conclusions and Residual Impacts

14.51 The flood risk assessment has concluded the site is not at risk from fluvial, coastal, tidal, groundwater, overland flow or drainage systems based flooding.

14.52 The Ashton Canal poses a low flood risk to the development if Pounds 1-2 or 2-3 were to overtop. Increasing awareness of the emergency call out procedure to local residents and building users, localised ground profiling, and consideration of low level building openings will reduce this risk.

Summary of Impacts

14.53 The potential impacts, proposed mitigation and residual impact are summarised in the following table, Figure 14.2:

Figure 14. 2: Summary of Impacts Table (Flood Risk)

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact	Comment
Flooding of Islington Wharf development land resulting from **canal overtopping**	Damage to building fabric	Negative	Long term	Low	Advertise information and the British Waterways Emergency Call Out phone number to residents and in public areas Localised ground raising adjacent to Lock 2 and Lock Keepers cottage to direct overland flood water to downstream Pound (No.1-2). Design to avoid openings at ground level in Block E on SE sides that could lead to underground car parks being flooded	Reduced	Initial likelihood is low due to: The canal pounds have spare capacity (freeboard) for storing excess water prior to them overtopping British Waterways operate regular asset inspection and maintenance of the lock gates and canal structure Vandalism of gates (by deliberate opening) is protected by a key system British Waterways operate an emergency call out procedure
	Damage to building contents	Negative	Short term	Low		Reduced	
	Long term economic loss of asset	Negative	Medium term	Low		Reduced	
	Loss of life	Negative	Long term	Low		Reduced	

15. Transport and Highways

Introduction

15.1 This Chapter was prepared by Martin Stockley Associates. It considers the existing transport infrastructure of the site area and considers the impact of the traffic related proposals that form the Islington Wharf development. In addition, accessibility to public transport and predicted effects on the highway network and on pedestrian movement have been considered. It considers two options for the site which are generally similar except Option II includes a hotel use as set out in Chapter 3.

15.2 It relates the consultations which have taken place with Manchester City Council and New East Manchester and the agreements reached. It uses the figures generated from a numerical model for the New Islington Millennium Community project which immediately adjoins Islington Wharf to the North East and adapts these figures to show the impact of the Islington Wharf development. This avoids the need to rerun the numerical model and ensures that both the separate and cumulative impacts of the two developments can be considered.

15.3 The data from the trip generation for vehicle movements has been used by Arup in their assessment of the acoustic and air quality impact of the scheme.

15.4 This Chapter is supported by a technical appendices at Appendix 15.1.

Baseline Conditions

15.5 The Islington Wharf site is located to the North East of the city centre bounded by Manchester's inner relief road, Great Ancoats Street, Old Mill Street, Vesta Street and the Ashton Canal. It is immediately adjacent to the New Islington Millennium Community development currently under construction on what was the Cardroon Estate. The current site comprises one access point off Old Mill Street for the British Waterways depot.

15.6 Great Ancoats Street is part of the Primary route network and is an element of the very busy Manchester and Salford Inner Relief Road. This route is heavily trafficked and therefore relatively sensitive to changes in the local network. In particular the signalled junction with Old Mill Street is sensitive to any impeding of movement of vehicles from Great Ancoats Street to Old Mill Street which could cause vehicles to queue back onto Great Ancoats Street.

15.7 Old Mill Street, which was once a busy through route into Manchester City Centre connecting directly to the Inner Relief Road, is currently undergoing a transformation as part of the New Islington development. From Vesta Street up to Weybridge Road its focus is changing, from

one of only through traffic to one which also serves the people living, working and visiting the new local centre at New Islington. The aim is to civilise the road by reducing speeds and changing the priority to favour cyclists and pedestrians which will in turn improve the general environment.

15.8 The section of Old Mill Street which runs from Vesta Street to Great Ancoats Street acts as a transition from the heart of New Islington Millennium Community to the Inner Relief Road. The proposals involve removing the existing access on Old Mill Street to the British Waterways site and forming the new main access to the Islington Wharf development from Old Mill Street.

15.9 In Option I this new access provides for private car parking for residents, short term parking for users of the proposed commercial units on Old Mill Street and service access to the residential blocks and the commercial units.

15.10 In Option II this will also provide for some service access to the proposed hotel although there is no parking allocated to the hotel development.

15.11 The proposal for this section of Old Mill Street is of four lanes as you turn off/ turn onto Great Ancoats Street. This will allow vehicles wishing to turn off Old Mill Street into the Islington Wharf development to do so without impeding vehicles turning off Great Ancoats Street onto Old Mill Street.

Potential Impacts

15.12 One of the key aims of New Islington Millennium Community and the development of Islington Wharf is to increase the numbers of pedestrians and cyclists in the area and to mitigate the effects of vehicle movements. A key part of delivering this change is bringing about a major improvement in the local environment generally and in particular a very significant improvement in the priority given to people not in vehicles. This Chapter looks at the impacts of the new development at Islington Wharf in the foregoing context.

15.13 Different stakeholders have different sensitivities in terms of the potential impacts. The Highways Authority's primary concern here is the impact on Great Ancoats Street in terms of maintaining vehicle flows at peak periods. However, they also have a concern with enhancing the quality of movement of people on foot and bicycles and of safety of all users of the public realm. So it is important not to focus entirely on vehicle/highways issues at the cost of the local environment.

15.14 The potential impacts are therefore looked at in the following categories:

- The impact on the public realm generally;
- The impact on Pedestrian and Cycle movements;
- The impact on the Inner Relief Road at the junction with Old Mill Street.

Potential Impacts on the Public Realm Generally

15.15 The existing public realm in this area is at best adequate and at worst poor. There is inadequate provision for pedestrians to cross Great Ancoats Street, the footpaths are not generous and are bordered either by derelict sites or inactive frontages. The canal towpath is not currently a desirable alternative to Old Mill Street as a route into the City. The footpath along Great Ancoats street has no active uses along the site boundary and there is therefore no relief from the hostility of the heavily trafficked Great Ancoats Street.

15.16 The proposed scheme transforms this derelict area into a well managed high quality public realm with full access to the canalside and provision of amenity to the area in the form of café/bar/restaurant facilities. The provision of small scale commercial units also adds to the local activity and natural surveillance of the area. In Option II the addition of a hotel provides very positive round the clock activity in the area which again contributes to the quality and security of the area.

Potential Impacts on Pedestrian and Cycle Movements

15.17 The proposed scheme widens the footpath on the South East side of Old Mill Street to over ten metres in places giving a much more generous provision to pedestrians and cyclists. Active retail and commercial frontages are provided along Old Mill Street with short term parking on the street to give added natural surveillance and security. A new pedestrian access is provided from Old Mill Street to the existing canal arm which leads down to the main towpath on the Ashton Canal. The major works to the New Islington section of Old Mill Street reduces vehicle speeds and thereby enhances the environment for pedestrians and cyclists.

15.18 It is understood that the Highways Authority are investigating the possibility of introducing a pedestrian phase into the signals at the junction of Old Mill Street and Great Ancoats Street as part of separately funded works to Old Mill Street.

15.19 Secure cycle parking is provided for residents in the proposed scheme and cycle stands will be provided for users of the retail/commercial units.

Potential Impacts on the Inner Relief Road

15.20 The Proposed development will increase the number of vehicle movements locally and the most significant potential impact from the vehicles relates to increasing numbers and/or slowing movement on the Inner Relief Road. The forecast trip generation from the proposed scheme is shown in Figure 15.1.

15.21 The movements relate to the provision of additional parking spaces on the site. The parking spaces are primarily for storage of residents vehicles with some parking allocated to the commercial uses. There will also be a need to allow service vehicles access to the site for delivery/collection/emergency services etc.

15.22 The proposed residential parking provision ratio for the site is 0.64:1 and located within the site boundary. The Highways Authority's current guidance is that residential accommodation should be provided on a 1:1 basis on the number of apartments. The reduced provision will reduce the potential impact on local noise and pollution and also on vehicle numbers using Old Mill Street and Great Ancoats Street.

15.23 The short term retail parking will also be located within the site with some parking along Old Mill Street on space generated by significantly widening the existing footpath and allowing vehicles to park on the edge of the widened footpath. This short term parking is essential for viability of the commercial and retail units. It provides a very positive, locally centred activity on Old Mill Street which also contributes to the overall security of the area.

15.24 Service vehicles will use the access from Old Mill Street to the get to the rear of the retail/commercial units. Service vehicles for the larger retail unit on the corner of Old Mill Street and Great Ancoats Street will pull onto the widened and strengthened footpath and park parallel to the unit and the roadway in order to unload. Similarly the vehicle will then pull forward onto Old Mill Street across the footpath to continue its journey. This avoids the stopped vehicle impeding vehicles on Old Mill Street, avoids having to transfer goods across the width of the footpath and allows plenty of footpath space for pedestrians.

15.25 A café/restaurant/bar unit is proposed beside the Ashton Canal and close to Great Ancoats Street. This will be serviced via a controlled (e.g. rising/falling bollard) entry from Great Ancoats Street. The footpath is enhanced in order to provide for HGV access at this point. This will also provide canalside access for emergency vehicles. This point is sufficiently far away from the signalled junction with Old Mill Street to avoid this impeding vehicles on Great Ancoats Street and there is adequate space provided before the control point to allow the HGV to pull out of the moving lane. Vehicles are able to turn within the site and re-enter Great Ancoats Street in a forward motion.

Methodology

15.26 The basis methodology involves:

- Liaison with Manchester City Council Highways Authority to discuss and agree the approach and principles of the scheme.
- Designing the public realm to accommodate the major improvements for pedestrians and cyclists.
- Checking that the public realm can accommodate the forecast additional vehicle movements within the site including access and servicing etc.
- Calculation of vehicle trip generation numbers for vehicles entering the Highways network resulting from the provision of parking spaces and servicing of the proposed development.
- Calculating the significance of the trip generation from ii above within the context of the numerical model from New Islington TIA.
- Further Liaison with Manchester City Council Highways Authority to agree that the earlier agreed principles have been followed through in the final design.

15.27 An initial meeting with Chris Barber of Manchester City Council Highways Department and Lyn Fenton of New East Manchester was held on 6th June 2004 to discuss the key issues of the site and the likely implications of any proposed development. At this stage no plans were formed and the purpose was to get input to the design from the two parties mentioned.

15.28 A further meeting with Chris Barber and Phil Tran of Manchester City Highways department was held on 15th September 2004 at which the principles of the scheme were discussed and agreed. The key elements of this agreement were:

- That an extra lane should be provided going North East on Old Mill Street to avoid vehicles queuing to enter Islington Wharf from impeding flow off Great Ancoats Street onto Old Mill Street.
- That the footpath on the North East side of Old Mill Street should be widened to an average of ten metres to make better provision for pedestrian movement.
- That the means of assessing the numerical impact on Great Ancoats Street of vehicles entering and leaving Islington Wharf would be assessed by modifying the results of the numerical model for the immediately adjacent New Islington Millennium Community.

- That the entry point off Old Mill Street as shown was far enough removed from the junction with Great Ancoats Street to avoid interference with the latter.
- That a single HGV parallel parked on the widened footpath beside the large retail unit was an appropriate method of servicing this unit.
- That a managed service access - left in, left out - off Great Ancoats Street onto the canal side was appropriate.
- That parking on the road edge of the widened footpath on Old Mill Street was appropriate for short term parking.
- That a residential parking provision of less than 1:1 would be justified on the basis of proximity to the city centre and excellent public transport, improved quality of the public realm particularly in respect of pedestrians and cyclists and in order to discourage the use of private vehicles.

15.29 Pedestrian movements have been forecast by looking at the local destinations and routes and by carrying out on-site walking tests to accurately assess the accessibility of the general area from the site and vice versa. See figure in Appendix 15.1 showing Walking Contours.

15.30 The access points from Old Mill Street and Great Ancoats Street have been designed using the swept paths of a large rigid vehicle. This ensures that an emergency vehicle, a refuse lorry or a servicing vehicle can use the access/ egress points.

15.31 Existing public transport connections around the Islington Wharf site have been assessed (see Appendix 15.1) by looking at the local bus routes, the site's proximity to the train services and the proposed Metrolink. This is a busy city centre area and all routes are well served by frequent services.

Results of Analysis - Assessment of Impacts

Public Realm Generally

15.32 The provision of a much wider footpath on Old Mill Street and active frontages to Old Mill Street, Great Ancoats Street and the canalside all contribute to a general improvement in the quality and amenity of the public realm. The improvements increase activity within the public realm and therefore enhance the security of the spaces provided. Local retail/commercial/café facilities add to the improved amenity.

Pedestrian and Cycle Provision

15.33 Pedestrian and cycle movement has been assessed by looking at the existing movement around the site and the routes of new access and movement are shown in Appendix 15.1. The walking contour diagram, gives an indication of the distance a pedestrian can walk from the centre of the site in 3 minutes. All the bus routes and the proposed Metrolink station are under a 3 minute walk away. Piccadilly Station is within ten minutes walk.

15.34 The proposed scheme provides pedestrian and cycle movement in places where none exists e.g. from Old Mill Street along canal arm to the Ashton Canal, and improves the quality of provision in existing areas on Old Mill Street, the Ashton Canal towpath and Great Ancoats Street. New public realm is provided beside the Ashton canal with high quality pedestrian access.

15.35 The existing public transport connections have been plotted see Appendix 15.1. This site is very well provided for by bus routes in and out of the city along Old Mill Street and Great Ancoats Street. Piccadilly Station is a ten minute walk and provides trains and connections to all major UK cities as well as direct services to Manchester Airport. The proposed Metrolink station is within three minutes walk. The proposed scheme enhances connections to public transport on all routes.

Inner Relief Road

15.36 The results of the modified numerical analysis on vehicle numbers (see Appendix 15.1) show that the effect on Great Ancoats Street even at peak times is forecast to be insignificant (less than 5% increase) in both Option I and Option II. This is because the phasing of the traffic signals at the junction of Old Mill Street and Great Ancoats Street regulates the number of vehicles moving on to Great Ancoats Street to a fixed maximum number. Therefore increasing the number of vehicles trying to access Great Ancoats Street can only result in longer queuing on Old Mill Street and this does not have an impact on the primary road network. It will also only occur during the limited morning and evening peak periods of the day. The analysis was carried out on a 1:1 parking provision so the actual provision of 0.64:1 will have a further reduced impact.

15.37 It was agreed in principle with the Highways Authority that a reduction in 1:1 provision of residential parking could be justified on the basis of quality and proximity of public transport provision, quality and availability of pedestrian and cyclist facilities, provision of secure cycle parking on site and in order to discourage the unnecessary use of private vehicles.

15.38 It is envisaged that a significant proportion of the new residents at Islington Wharf will work in the city centre and use both local retail and city centre retail facilities. Of those not working in the city centre a significant proportion are likely to use the existing and planned public transport facilities to commute to surrounding local areas and to other nearby cities.

15.39 As noted previously the public realm is greatly improved as a result of these proposals. Public Transport in the area is already excellent and the addition of the new Metrolink route in the medium term will further add to this. Connections and access to public transport are greatly enhanced by this proposal. Provision is made to support more use of cycles by residents and there is provision to add further to this if more cycle spaces are required within the basement car parks. The reduced provision of 0.64:1 parking spaces will significantly reduce the potential impact on the road network.

15.40 Service vehicles are able to be accommodated without making dedicated provision such as lay-bys and service yards. When dedicated provision is made within the public realm this generally has a very negative effect of taking large areas which could be footpath and allocating the space to an activity which occurs over a very limited period of any particular day.

Proposed Mitigation

15.41 Generally there are no mitigation measures required as a result of the proposed development.

15.42 The Public Realm is greatly enhanced, connections to public transport are enhanced and the impact of additional vehicles on the road network are found to be insignificant.

15.43 As well as the public realm improvements provision is being made within the scheme to encourage walking and the use of cycles.

Conclusion and Residual Impacts

15.44 This assessment was carried out in order to assess the potential impact on Movement and Transport of the proposed development at Islington Wharf. The key issues relate to the existing poor quality public realm, the poor provision for pedestrians and cyclists and whether new vehicle movements generated by the new development would have a negative impact on Great Ancoats Street and the wider network.

15.45 The findings of the assessment show that the impact of vehicle numbers on Great Ancoats Street are not significant, that the public realm proposals are a major improvement and that provision for cyclists and pedestrians is significantly improved.

15.46 No mitigation measures have been found to be required for movement and transport other than those already included within the proposed development.

15.47 The residual effects of the scheme are generally positive in that the existing site is a derelict and poorly used part of the City. There is some increase in vehicle numbers on Great Ancoats Street as a result of the development but the small percentage change at peak times is not significant. This is because the phasing of the traffic signals at the junction of Old Mill Street and Great Ancoats Street regulates the number of vehicles moving on to Great Ancoats Street to a fixed maximum number. Therefore increasing the number of vehicles trying to access Great Ancoats Street can only result in longer queuing on Old Mill Street and this does not have an impact on the primary road network. It will also only occur during the limited morning and evening peak periods of the day.

15.48 The additional vehicle numbers also have the positive impact of generating activity on the edge of a new residential area which can enhance the natural surveillance of the streets.

Summary of Impacts

15.49 The potential impacts, proposed mitigation and residual impact are summarised in the following table, Figure 15.1.

Figure 15.1: Summary of Transport Impacts

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact
During Construction						
Construction traffic	Construction traffic near town centre	Negative	Short term	Moderate local	Restriction on working hours to comply with MCC UDP. Routing of construction traffic to and from site to avoid residential areas. This will be regulated by condition and/or legal agreements.	None
Pedestrian movement	Narrowing of footways	Negative	Short term	Minor local	Some disruption to pedestrian movement through and around the site unavoidable during construction. Conditions will ensure that minimum footway provision is maintained. Minimum standards would be agreed with MCC.	None
Cycle movement	Work on adjacent highways	Negative	Short term	Minor local	Conditions will ensure that cyclists are adequately catered for in all traffic management proposals.	None
Road marking alteration	Narrowing of road	Negative	Short term	Minor local	Restriction on working hours.	None

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact
Following Completion						
Pedestrian Movement	Movement through and within site	Positive	Long term	Major local	Increase in quality of pedestrian routes	Positive
Cycle movement	Accessibility and safety	Positive	Long term	Moderate local	Increase in quality of cycle routes	Positive
Cycle parking	Provision of new facilities	Positive	Long term	Moderate local	Employee and public cycle parking spaces will be provided	Positive
Access by car	Potential traffic delay at peak periods	Negative	Long term	Minor local		Neutral
Car Parking	Adequacy of parking provision	Positive	Long term	Moderate local		Positive
Access by bus	Accessibility	Positive	Long term	Major local		Positive
Access by mobility impaired	Accessibility	Positive	Long term	Minor local	Tactile paving installed. Parking bays provided.	Positive

16. Ecology

Introduction

16.1 Penny Anderson Associates Ltd, ecological consultants, have prepared this Chapter on ecology and nature conservation. The Scoping Report (November 2004) defines the scope of this assessment. This Chapter identifies the ecological constraints and potential impacts posed by the proposed development and goes on to offer suitable mitigation measures to address these. The Chapter has been prepared in consultation with British Waterways and Greater Manchester Ecology Unit. The text refers to a number of Appendices, which are referenced separately. All tables and figures 1 and 2 referred to in this section can be found in the Appendices.

16.2 The Islington Wharf site is about 2 hectares in size and is bisected by the Islington Branch canal arm. The site contains several buildings associated with present and former British Waterways activities. The site is post-industrial, and terrestrial areas are now characterised by disturbed ground supporting common and widespread plants and areas of self-colonised shrubs.

16.3 This Chapter considers the impact of both scheme Options I and II. Full descriptions of these are set out in Chapter 3. The proposed location of the hotel at the west end of the block means that there is no difference between the effects of the options on the ecological receptors in this study.

16.4 The main ecological issues found to be present on the site relate to the plant species found in the canal arm and use of the canal arm by bats. Breeding birds are likely to utilise scrub habitats during the bird breeding season.

16.5 The assessment broadly follows the *Guidelines for Baseline Ecological Assessment* (Institute of Environmental Assessment 1995), and presents a detailed assessment of potential impacts upon nature conservation interests present on the site.

Potential Impacts

16.6 Redevelopment of the site would involve a number of potential impacts, both temporary and permanent, as outlined in Figure 16.1, below.

Figure 16.1: Summary of potential impacts on ecology considered in this Chapter.

Potential Impacts		Phase 1	Phase 2	Phase 3
Temporary:	Site clearance	Yes	Yes	Yes
	Construction traffic	Yes	Yes	Yes
	Dewatering and repairs to canal arm and walls	Yes	Yes	
Permanent:	Removal of existing buildings	Yes	Yes	Yes
	Removal of tree and scrub habitats on site	Yes	Yes	Yes
	Shading of canal arm by new buildings		Yes	
	Increased use of temporary moorings in canal arm		Yes	Yes
	Increase in night-time lighting of canal	Yes	Yes	Yes

Methodology and Terms of Reference

16.7 This Chapter is based upon an ecological study which incorporated the following elements:

- Desk study;
- Habitat survey;
- Bat survey;
- Black redstart (and breeding birds) survey;
- Evaluation of nature conservation value;
- Impact assessment.

16.8 The methodologies (and survey dates where relevant) for each part of the study are detailed in the following paragraphs.

Desk study

16.9 The desk study aimed to gather information on protected sites on or adjacent to the development site, and on protected and rare species in the vicinity. The following organisations were contacted to request information pertaining to the site. Copies of the letters and the responses are included from the first three in Appendix 16.1. Consultation with British Waterways and Greater Manchester Ecology Unit was conducted via meetings and telephone calls and related to the canal arm and its vegetation.

- Greater Manchester Ecology Unit;
- Greater Manchester Birds Database;
- South Lancashire Bat Group;
- British Waterways.

Habitats Survey

16.10 The survey of habitats and vegetation on the site was conducted on 5th May 2004 and comprised an extended Phase 1 Habitat Survey (Institute of Environmental Assessment 1995, JNCC 1990).

16.11 The methodology provides a standard technique for classifying and mapping wildlife habitats, including urban areas. The survey method is based primarily on the vegetation present, with additional information on topographic and substrate features also being noted. Plant species were assigned a relative abundance within each habitat using the DAFOR scale (d = dominant; a = abundant; f = frequent; o = occasional; r = rare). The locations of invasive plant species such as Japanese knotweed were specifically mapped.

16.12 The habitat survey also considered potential for protected and rare species within the site, such as badger, bats and breeding birds. Visible signs of floating water plantain (*Luronium natans*) and grasswrack pondweed (*Potamogeton compressus*), which occur in the canal arm, were looked for at the canal edge and water surface during the visit. Where apparent, the extent of colonies were mapped onto the habitat map.

Bat Survey

16.13 An inspection of the buildings on site was carried out on 24th May 2004 with the aim of detecting bats on site, if present. The building inspection followed methods for searching buildings based upon the recommendations in the *Bat Workers Manual* (English Nature 1999) and fulfils the recommendations in the *Bat Mitigation Guidelines* (English Nature 2004). It was carried out by a suitably experienced and fully trained bat surveyor.

Figure 16.2: Guidelines for Inspecting Buildings to Detect Bats.

Bat Roost	Signs of bat usage found in structure.
High Potential	Suitable structure accessible to bats.
Medium Potential	Some potential for bats – some suitable features.
Low potential	Either poor suitability for bats (lacks suitable roosting areas inaccessible to bats), or all areas searched and no signs found.

16.14 The building inspection constituted a visual internal and external search using close-focusing binoculars looking for bats, bat droppings, fur-oil marks, urine stains and prey residues. The buildings were ranked into the following categories, according to their suitability for bats.

16.15 A 2-visit emergence survey was then carried out on all buildings ranking medium to high potential, on 27th May 2004 and 2nd June 2004. The Lock-keepers cottage (now outside the current proposals) and environs were observed for pre-dawn bat swarming activity on 5th May 2004.

16.16 Dusk emergence surveys followed the methods used in the National Bat Monitoring Programme, commencing 15 minutes before sunset and continuing for 60 minutes after sunset. This survey period is designed to encompass the variable emergence times of different species of bat. The pre-dawn swarming survey commenced 1 hour before dawn.

Black Redstart Survey

16.17 The methods followed were obtained by using a combination of suggested survey techniques from *Bird Monitoring Methods* (Cranswick 1998) and census methods described on the web page www.blackredstarts.org.uk.

16.18 Six visits were undertaken in total, throughout May. Three of these visits were undertaken during the early hours of the morning (5th, 10th and 24th May 2004) commencing 1 hour before dawn; 1 visit (14th May) was undertaken during the middle part of the day and a further two (17th and 27th May 2004) were made in the evening after 6pm. The site was walked several times over a period of two hours. Other birds present on the site were also noted (although these were not the target species), and a species list compiled.

Assessment of Nature Conservation Value

16.19 Nature conservation evaluation in impact assessment studies has until recently relied rather heavily on the Ratcliffe criteria (Ratcliffe 1977), which comprise Rarity, Diversity, Size, Ecological Position, Naturalness, Fragility, Intrinsic Appeal, Potential Value and Recorded History. Byron (2000) provides a more recent and refined system for the evaluation of habitats and species which also presents a method for assessing the magnitude and significance of potential impacts on these ecological receptors. Table B (Appendix 16) presents the evaluation framework used here, after DETR 1998.

16.20 This appraisal system provides guidance on the evaluation of habitats and species, particularly those that are rare or protected, and integrates principles of biodiversity into the evaluation process. For the purposes of this assessment, the above evaluation categories, i.e. national, regional etc. have been interpreted for the local context as set out in Table C (Appendix 16).

Impact Analysis & Mitigation

16.21 The ecological impact assessment followed Byron (2000), which was devised for assessment of road schemes, but contains principles and guidance which is applicable to EIAs of all development types. The results of the studies outlined above were assessed in the context of national, regional and local nature conservation interest, according to the information available. The presence of designated sites, protected species and the occurrence of habitats and species listed in the Biodiversity Action Plan for Greater Manchester (Greater Manchester Ecology Unit 2002) were considered in the light of potential impacts identified above.

16.22 The evaluation of the significance of potential ecological impacts is based on the sensitivity of the resource and the magnitude of the impact. The sensitivity of the resource relates to its value (Tables B and C). The magnitude of impact is related to the extent to which site integrity is affected, which is reflected in the site's ability to continue to function ecologically and achieve its objectives under the influence of the predicted impact (Table D, Appendix 16).

16.23 Impact magnitude is combined with the ecological importance and sensitivity of the habitats or species affected, to determine an overall level of Impact Significance. The resulting scales of possible impact significance are presented in Table E (Appendix 16).

16.24 To an extent, the approach presented in this matrix is inevitably simplistic. Therefore the assessment of impact significance must be further qualified by a consideration of other factors, such as the extent and duration of the impact, its timing and the probability that the potential impact will, in fact, occur.

Baseline Conditions

Protected sites

16.25 No SSSIs occur adjacent to or within 2 km of the site. The site lies adjacent to the Ashton Canal Grade A Site of Biological Interest (SBI), as notified by Greater Manchester Ecology Unit. SBIs are non-statutory sites recognised in the Unitary Development Plan for their nature conservation value in Greater Manchester. Grade A SBIs are regarded as being of "County Importance", while Grades B and C are of "District" or "More than Local" importance, respectively.

16.26 The citation for the Ashton Canal SBI is presented in Appendix 16.1. The site is notified for its submerged aquatic flora, which contains a range of species including the European Protected Species floating water plantain (Luronium natans), plus reasonably diverse fringing vegetation and a rich invertebrate fauna. The Islington Branch canal arm relevant to this study is specifically noted for containing both floating water plantain and the nationally scarce grasswrack pondweed (Potamogeton compressus).

Protected species

16.27 Records for protected species at the site were confined to floating water plantain and a bat roost within 200m. There is potential habitat for black redstart, which do use post-industrial sites in Greater Manchester. Scrub habitats are likely to support bird breeding activity.

Floating water plantain

Legislation

16.28 The European Protected plant floating water plantain occurs throughout the Ashton Canal system and is noted to grow in the Islington Branch canal arm in the SBI citation (Appendix 16.1). British Waterways confirm that it has occurred in the canal side-arm in past years, most recently in 2003.

16.29 Floating water plantain is listed on Annexes II and IV of the Habitats Directive and Appendix I of the Bern Convention. It is protected under Schedule 4 of the Conservation (Natural Habitats & c.) Regulations 1994 (which implements the EC Directive 92/43/EEC in the United Kingdom) and Schedule 8 of the Wildlife & Countryside Act 1981. Summarised, this protection makes it an offence, with certain exceptions, to:

- deliberately pick, collect, cut, uproot or destroy. a wild plant of a European protected species;
- keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal or plant of a European protected species, or any part of, or anything derived from such a wild animal or plant.

16.30 Any activity that would result in a contravention of the above legislation requires a licence to avoid committing an offence. Defra has powers to grant a licence under Regulation 44(2)(e) on the basis of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.

16.31 In addition, Defra can only issue a licence if it is satisfied that the activity meets one of the above purposes and is also satisfied of parts (a) and (b) of Regulation 44(3), such that:

- that there is no satisfactory alternative;
- and that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range.

Ecology

16.32 Floating water plantain thrives best in open water with a moderate degree of disturbance, where growth of competing emergent vegetation is held in check (JNCC 2004). Populations often fluctuate and the species is noted to rely on periodic disturbance for its survival, such as provided in canals by light boat traffic or periodic dredging (JNCC 1994). Canals appear to provide the 'core' habitat for this species (JNCC 2004). The plant exhibits a number of reproductive strategies described by Lansdown and Wade (2003) as 'annual flowering, perennial flowering, and perennial vegetative'. It can persist in shaded sites as a rosette of submerged leaves, reproducing vegetatively from stolons. The observed declines in lowland and canal sites seem to be due to habitat destruction, nutrient enrichment and high levels of turbidity from silt stirred up by boat traffic.

Distribution

16.33 Scarce Plants in Britain (JNCC 1994) lists the species as 'scarce' (i.e. recorded from 16 to 100 hectads[2] from 1970 onwards) and confined mainly to the North West Midlands and Wales. More recently, Preston et. al. (2002) describe the species as present in only 52 hectads in the 1987 to 1999 period, but do note that the species is probably still under-recorded.

[2] A hectad is a square 10 kilometres by 10 kilometres on the National Grid (100 square kilometres in area), often used for mapping national atlases.

16.34 Floating water plantain is understood to have colonised the canal systems of the North West Midlands and Manchester by the 1930's (Willby & Eaton 1993). In Manchester the species in noted in Savidge (1963) as occasionally naturalised in canals and locally abundant and a first record is given for the plant on the Ashton Canal (Hollingwood Branch) at Droylsden in 1939. Since 1960, an overall contraction in it's range has occurred, following a rapid increase in propeller-driven boat traffic (Willby & Eaton 1993). Records now exist for the species in the Greater Manchester Boroughs of Manchester, Oldham, Rochdale, Salford, Stockport, Tameside and Wigan (Regional Biodiversity Steering Group for North West England 1999). At present, the plant is widespread but localised on the Ashton Canal but usually confined to the basins and pounds (pers. comm. J. Leach), with large colonies present in the Fairfield Basin (c. SJ901979), and at 'Sport City' (SJ867988), both upstream of site.

16.35 Floating water plantain is a UK Biodiversity Action Plan species, with a full action plan published by JNCC (2004). Floating water plantain is included in the Greater Manchester Biodiversity Action Plan (GMEU 2003). The Species Action Plan is presented in Appendix 16.2, and has a relevant objective to ensure all planning applications are adequately assessed in relation to their impact on floating water plantain, that loss or damage is avoided and that opportunities are taken for enhancement.

16.36 Although no dedicated surveys for the species have been conducted on the Ashton Canal, floating water plantain has been previously reported from the canal arm, and British Waterways noted flowering springs in 2003. No plants of this small and inconspicuous species were noted during the May 2004 survey, although turbid water may have obscured detection of very rarely occurring individual plants, if they were present.

Bats

16.37 The Wildlife and Countryside Act 1981 protects bats and their roosts. Some parts have been amended by the Countryside and Rights of Way Act 2000 in England and Wales. The Conservation (Natural Habitats, &c.) Regulations 1994 (better known as the Habitats Regulations), implements the Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora - better known as the Habitats Directive. Under this, all bats are listed as 'European Protected Species of animals'.

16.38 A bat roost is reported by GMEU to occur within 200m of the development site. The results of the bat surveys are summarised in Tables F & G (Appendix 16). The location of the buildings searched is shown on Figure 1.

16.39 The buildings on site were not found to be used by bats although a low level of bat activity was noted over the canal and canal arm during the night time bat surveys. This was confined to pipistrelle (Pipistrellus sp.) and probable Daubenton's (Myotis daubentonii) bats commuting to the Ashton Canal from the north, following the canal arm across the development site. Some foraging also took place over the canal.

16.40 The canal arm walls are not considered to be very suitable for bat roosts. Mostly this was due to their low rise above the water level, but taller areas near the former office building (B3) did not have suitable gaps.

Black redstart

16.41 Black redstarts are protected under Schedule 1 of the Wildlife and Countryside Act 1981, which protects the bird, its eggs and nestlings from killing injury and damage or destruction of its nest. Importantly, the Act also protects a Schedule 1 bird from any intentional disturbance while it is building its nest, or is in, on or near a nest containing eggs or young, or disturbance of the dependent young of such a bird.

16.42 Black redstarts are also listed on the British Trust for Ornithology Amber List of birds of medium conservation concern (Eaton et. al. 2003). Birds qualify for 'Amber' status if they have a five-year breeding population of between 1 to 300 pairs in the UK. In 2000, the Rare Breeding Birds Panel considered there to be a national population of 66 breeding pairs of black redstart.

16.43 Black redstart will nest in cavities and on ledges of buildings. Proximity to waste ground and open water such as canals, which provide an important source of flying insect food, is preferred. The habitats provided by scrub, bare ground, buildings and canal on the development site are potentially suitable for the bird, which breeds in Manchester city centre. Records from Greater Manchester Bird Database indicate that black redstart were recorded breeding within 500m in 1999 and about 2km away in 2001.

16.44 No black redstarts were recorded, either visually or audibly, at any time during the survey visits, or noted in adjacent land. However, this finding does not exclude the possibility that they might use the site in future seasons, if measures are not taken to discourage nesting.

Breeding Birds

16.45 During the black redstart survey, a considerable amount of general bird breeding activity was noted on the site. The species recorded are listed in Table H (Appendix 16), together with notes on their population status in the UK. Breeding birds are protected from disturbance under the Wildlife and Countryside Act 1981. The breeding season is generally taken to be from March to August inclusive.

16.46 In general the species list was limited to common and widespread species, although dunnock, kestrel and song thrush are listed by RSPB as being of medium conservation concern due to population declines across the UK (Eaton et. al. 2003). Song thrush is a UK and Greater Manchester Biodiversity Action Plan species, with the Species Action Plan objective of no further loss of populations or habitat in Greater Manchester.

Species of nature conservation interest

Grasswrack pondweed

16.47 A colony of grasswrack pondweed (Potamogeton compressus) is known from the Islington Branch canal arm encompassed by the site. This plant is known from 2 other sites in Greater Manchester: a length of the Ashton Canal at Openshaw (approximately between grid references SJ885982 and SJ892979), and the Bridgewater Basin in the city centre (SJ838976).

16.48 Grasswrack pondweed is now classified as 'nationally scarce' in GB (occurring in 16-100 hectads in Great Britain) (JNCC 2004), and is listed in JNCC 1994 as 'scarce' (recorded from 16 to 100 hectads from 1970 onwards). Preston (2004) cites the species as occurring in 28 hectads, a decline from 85 pre-1970.

16.49 Grasswrack pondweed is a UK BAP species, with a full action plan published by JNCC (2004) and presented in Appendix 16.3. British Waterways are the lead partner for this species and thus have a particular interest in and responsibility for its welfare. Grasswrack pondweed will also be included in the 2nd tranche of Species Action Plans to be prepared for the Greater Manchester Biodiversity Action Plan. In common with all other wild plants, grasswrack pondweed receives general protection under the Wildlife and Countryside Act 1981, which makes any unauthorised intentional uprooting of any wild plant not included in Schedule 8 an offence.

16.50 Grasswrack pondweed's natural habitat is slow-flowing lowland rivers and ox-bows, but it has colonised canals, especially in the English Midlands and Welsh Borders. These sites represent some of the most vigorous colonies for a species which has largely been lost from rivers and lakes (Preston et. al. 2002). The species sometimes sets seed, but vegetative reproduction is more usual - via specialised 'turions', which also act as dispersal agents (JNCC 1994) and can be transplanted to suitable sites. In Manchester, the species has been known from canals, including the Ashton Canal since the 1940's (Savidge et. al. 1963), although the age of the Islington Branch colony is not precisely known.

16.51 The amount of light falling on the leaves of grasswrack pondweed, particularly on its turions at the bottom of the canal in the late spring, is likely to be important for the successful growth and perpetuation of a given colony. This is determined by local shading, the turbidity and depth of the water and the amount of competition. Some shading may help the plant by reducing competition (pers. comm. Alex Lockton).

16.52 The species has decreased in Britain largely due to nutrient enrichment of water bodies, but losses in canals may be a result of disuse and drying out in some sites and disturbance from heavy boating use in others.

16.53 The approximate extent of the grasswrack pondweed colony present on the site in May 2004 is indicated on the habitat map, presented in Figure 2. This was gauged from growing plant material visible at the water surface. The populations have been present there for a long time and are not impacted by operational usage, although litter and lock gates stored in the northern end of the canal arm may limit the colony size at present – see Plate 1, Appendices.

Habitats

16.54 The Islington Wharf site comprises disturbed waste ground, the British Waterways depot, a canal arm and several buildings. The site can be divided into the 4 main areas described below. Buildings are identified on Figure 1. A habitat map is presented in Figure 2, also showing the location of Japanese knotweed plants on the date of survey.

16.55 Western section - this covers just over half of the site and is mainly disturbed ground and scrub, dominated by willow. Compacted ground occurs where vehicles have driven, and recent mounds of piled earth are also present. Several clumps of Japanese knotweed are present. The scrub is the main focus for breeding bird activity on the site. Mown amenity grassland and young trees are associated with the canal frontage.

16.56 The Vesta Street Depot (British Waterways) is mainly actively disturbed ground and two operational buildings (Buildings 1 and 2).

16.57 Islington Branch canal arm – this part of the Ashton Canal SBI contained the European protected plant floating water plantain in 2003 (pers. comm. J. Leach), and supports an established colony of the nationally scarce plant grasswrack pondweed. A brick bridge spans the canal arm at it's mouth. At present, a British Waterways work boat is moored half way up the canal arm, and its movements range between 1 per day at peak operational times in summer, to 1 or 2 per month in winter.

16.58 Eastern section – large areas are covered by concrete floors of former buildings, now removed. Around this, and in cracks in the concrete, tall herb and scattered scrub habitats have colonised. An area of denser shrubs at the northern end appears to have developed from landscape planting as a number of garden cultivars persist. A former office block (now derelict) (Building 3) and the Lock-keeper's cottage (Building 4, outside the current proposals) are located here.

16.59 In summary, the main habitats and plant species present are common and widespread and typical of disturbed post-industrial sites in central Manchester. The main features are concrete hard standing, compacted ground, areas of dense and scattered scrub and buildings. Also present are mown amenity grass, young trees, mounded earth and Japanese knotweed stands. Detailed habitat notes are given in Appendix 16.4. Plant species lists are presented in Appendix 16.5.

Assessment of nature conservation value

16.60 The evaluation of the nature conservation issues, or 'receptors', on the site is summarised in Table I, following the framework set out in Tables B and C (Appendix 16). The rationale for the selection of each receptor is given in the table.

16.61 The Ashton Canal Grade A SBI is located adjacent to the development site. This designation includes the Islington Branch canal arm, in which floating water plantain has been known to occur, and where an established colony of grasswrack pondweed is located. These are two of the plants for which the SBI is specifically designated. The potential effects upon these two plants will encapsulate the total effects upon the SBI, and these plants have been considered separately as their ecological requirements and legal situations are different. The SBI itself is not considered further.

16.62 All receptors evaluated at grade D or lower have been discounted from further stages of the process. Although there is some biodiversity associated with these receptors, they do not have intrinsic value in their own right and are likely to be adequately replaced (albeit possibly by different habitats) in the final development.

Results of Analysis - Impact Assessment

16.63 A summary of the impact magnitudes on ecological receptors is given in Table J(Appendix 16). This table separates the impacts of activities associated with each of the project construction Phases, 1, 2 and 3. The following paragraphs discuss the potential significance of the impacts of the activities listed in Table A on the ecological receptors identified in Table I.

Site clearance

16.64 Site clearance, especially of scrub habitats, is likely to affect birds. To avoid disturbing breeding birds which are protected, English Nature recommend that vegetation clearance is avoided from March to August inclusive. In this proposal, site works commencing with clearance are planned for July. Therefore, all scrub vegetation must be cleared before March to avoid delays caused by birds breeding on the site. The site will be re-checked by a suitable experienced ecologist for breeding bird activity in late June/July to ensure that no bird breeding activity is present prior to commencement of works.

16.65 In terms of the local population context of breeding birds currently utilising habitats on the Islington Wharf site, the area affected is very small in relation to the total amount of similar habitat available locally, especially up and down the Ashton Canal. The birds displaced by site development will easily find alternative nesting places and overall the populations in Greater Manchester are unlikely to be affected. In addition, landscaping on the site post-development will provide new habitats, although these are likely to be of different types to the present. Therefore, the impact significance, before mitigation, is assessed to be slight adverse.

Construction traffic

16.66 Disturbance from construction traffic has the potential to disturb breeding birds, but this will be temporary and associated with development works. If birds are discouraged from the site in the first place, the impact significance of any disturbance caused would be nil. The site is already in a busy and urban location, adjacent to a major road through Manchester, so bird species present are already accustomed to a high level of traffic noise and exhaust fumes, plus the activities at the British Waterways depot and of people who currently access the site for anti-social uses.

Dewatering and repair to the canal arm

16.67 Dewatering and repair to the canal arm - this is likely to comprise an initial draw-down in Phase 1 for a short period of 1 or 2 days to inspect the work required. This would be followed in Phase 2 by the works themselves, the duration or extent of which is not known until after the initial inspection. Both activities will require a Defra licence on account of the presence of floating water plantain.

16.68 Floating water plantain and grasswrack pondweed are potentially affected by canal dewatering, from desiccation, trampling, crushing by machinery, exposure to frost and leaf-burn from direct (summer) sunlight. Detrimental effects are likely to increase in line with the duration of the dewatering. However, floating water plantain is an early colonist of disturbed habitats, and is likely to benefit once works are complete. Certainly, the plant is known to take advantage of severe disturbance, e.g. canal dredging works (Willby and Eaton 1993), pond scraping (Lansdown and Wade 2003) and clearance of drainage ditches (Hanspach and Kraush 1987 in Willby and Eaton 1993).

16.69 Grasswrack pondweed, on the other hand, is a long-lived perennial, reproducing by vegetative turions or seed. It has a very limited distribution on the Ashton Canal. Safeguards for this colony should be considered with the Defra licence for floating water plantain, and temporary translocation considered if extensive dredging and/or vehicle entry is required into the canal arm to conduct the repair works. The plant is easy to culture from turions if collected during August and September (pers. comm. J. Leach). These can be over wintered off site for reintroduction the following spring.

16.70 Thus, it is considered that the plants could survive a draw-down of 1 or 2 days (as proposed during Phase 1) in situ without severe detriment, especially if this were carried out during the winter months when the plants are dormant, and weather conditions are mild and damp (not freezing). For draw-down of longer duration, temporary removal of plants of both species is likely to be necessary, followed by re-introduction once works are complete. The process to be followed for both species will be detailed in the Defra licence application Method Statement for floating water plantain, which will be prepared and supervised by a suitably experienced ecologist.

16.71 Such a Method Statement will be a pre-requisite for the Defra licence application for floating water plantain, which will seek to ensure that the activities authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status within it's natural range.

Removal of existing buildings

16.72 Removal of buildings has the potential to affect bats and black redstarts, if present. On this site, removal will not affect bat roosts as none were found. Nor will it affect black redstart as they were not found. However, opportunities exist to accrue positive impacts for the development in the form of offering new habitats for both species - see mitigation section below.

Shading of canal arm by new buildings

16.73 The erection of new buildings on the site will increase the level of shading of the canal arm from the current situation. This could affect the rare plants growing there: floating water plantain and grasswrack pondweed. The analysis of canal shading for Phase 1 is presented in Appendix 16.6. In midsummer, there is no impact from the Phase 1 development, but at the equinoxes, the southern section receives some shading, losing between 2 and 4 hours of the available 9 hours sunshine. It is unlikely that this level of increased shading would significantly affect the two plant species of interest, and impact significance is negligible.

16.74 Phase 2 has more intense shading impacts, as shown in the shading predictions for the full development presented in Appendix 16.7. Under the current 'outline' designs, there is an increased midsummer shading of 2 of available 9 hours at the northern end increasing to 5 of available 9 hours behind Block C. At the equinoxes, the situation is more extreme, with the majority of the canal arm being shaded for 5 out of 7 available sunshine hours, but some areas behind Block C receiving 6 hours of shade (i.e. only 1 hour sunshine). It is highly likely that this would affect plants located in the most heavily shaded areas - the significance of this is discussed below.

16.75 Floating water plantain is widespread but localised in Greater Manchester, occurring locally in pounds and basins of the Ashton Canal. The Islington Branch canal arm does not represent the sole location for this species within the Ashton Canal system or Greater Manchester. The species has not been surveyed in detail on the Ashton Canal. The colony baseline within the canal arm is not known – if this is low, as is expected due to plants not being noted during the survey, the impact significance of increased shading from Phase 2 buildings is likely to be large adverse in the local context. In the wider context of the Ashton Canal's whole population, this could be considered to reduce to slight adverse. If no plants are present, there is no impact.

16.76 The canal arm's grasswrack pondweed colony, on the other hand, is one of 3 known sites in Greater Manchester and one of 2 in the Ashton Canal (West) SBI. The approximate extent of the colony is known (see Figure 2), and Phase 2 shading from Block C is likely to impact directly upon this colony, with large adverse impact significance, in the absence of mitigation.

16.77 The literature indicates that floating water plantain is tolerant of some shading, developing a growth form characterised by broad, floating leaves (Lansdown and Wade 2003) in water up to 0.5m deep. However, extremes may trigger a change in strategy, from perennial flowering to perennial vegetative - and a corresponding change in dispersal modes from seed to stolons (Willby and Eaton 1993). Less is known about grasswrack pondweed, although in deep water, it develops long stems which are able to grow up to the water surface where light levels are highest.

Increased boat traffic in canal arm

16.78 Increased boat traffic in the canal arm could potentially affect the rare plants through stirred-up silt reducing the light levels penetrating the water to reach the leaves, especially in spring when these are most deeply submerged. These effects will be minimised by the proposed strategy of allowing no moorings at all in the canal arm during construction phases and two years after plus a silt screen at the bridge. If ecological monitoring for these 7 years indicates the colonies remain at favourable conservation status, a single mooring would be introduced only to the southern half of the canal arm (indicated in Figure 3) with the silt screen re-installed to limit boats and silt entering the northern 'wildlife reserve'.

16.79 The intended mooring would be for temporary craft mooring for a few hours, so direct shading as by permanently moored craft is not considered likely to have an impact. The mooring, for 1 boat only, would be confined to the south end of the canal arm, which is most densely shaded by Phase 2. The current level of boat movements is understood to be up to 1 per day at peak summer activity, and 1 to 2 per month in winter (pers. comm. J. Leach). However, the frequency of new boat movements above this is not known so cannot be assessed for its potential to impact the important plants.

16.80 What is known is that the combination of increased water turbidity from more regular boat movements, and increased shading from Block C is likely to increase the severity of impacts on the vegetation from the development. It is probable that this combination would impact with a large adverse significance upon the plant colonies in the canal arm particularly plants located in the most heavily shaded areas, in the absence of the mitigation strategy proposed above.

Increased night-time lighting

16.81 Increased night-time lighting is likely to be required as a result of the development of residential and leisure activities at the Islington Wharf site. While street lamps which attract insects can also attract some species of bats for feeding (Rydell 1992, Rydell *et. al.* 1996), lights in flight paths may discourage bats. Insensitive lighting could create localised conditions where bats are no longer able to commute or forage, potentially affecting the success of local colonies.

16.82 Bats are already using the canal habitats around the site, which currently receive a low level of lighting. In order to minimise the impact upon bats, the lighting strategy for the development will be designed to keep light levels as low as possible on the canal. This will include using the minimum lux levels required for safe footpaths, installing ground-lighting rather than up-lighting e.g. bollard lights, and avoiding feature lighting of the canal or water side features. Direct lighting of any new bat roost entrances planned for the development will also be avoided.

Proposed Mitigation and Safeguard Measures

16.83 Tables K, L & M summarise the impact assessment process for Phases 1, 2 & 3 respectively. This includes consideration of mitigation and residual impacts.

Bats

16.84 Safeguard measures in relation to minimising the effect upon bats of night-time lighting strategy at Islington Wharf are discussed above. With a suitable lighting strategy in place, the residual effect of the development on bats foraging and commuting is likely to be neutral.

16.85 In addition, a minor positive effect is potentially obtainable through the incorporation of bat roost structures into the new buildings. Guidance on roost design and location is given in Appendix 16.8.

Black redstart

16.86 The development itself is considered to have no direct impact upon black redstart as the species were not found to be present on the site. However, as the species makes use of semi- to derelict sites around Manchester, it's potential range will reduce over time as more suitable sites become re-developed. This means that the development 'boom' of which Islington Wharf is part, may impact population of this rare bird in Greater Manchester in the longer term.

16.87 Potential opportunities do exist within this development to offer suitable habitat features within the landscaping for the development, especially the podium garden. Many of these measures have been successfully tried at urban sites in London, are relatively inexpensive and can be included within the scheme design. Adjacent insect-rich habitats such as scrub and water are also factors in nesting site choice, and can be provided by appropriate landscaping.

Floating water plantain

16.88 Impacts from dewatering of the canal arm must be addressed through preparation of a Method Statement as part of the Defra licensing process. Locally, the species may in fact benefit from some disturbance of the canal arm, as it is opportunistic in colonising new and recently disturbed habitats. Overall, the species is present throughout the Ashton Canal system and has shown itself mobile within this area and able to colonise new sites as they become available. Careful development and adherence to a method statement will help to ensure residual impacts are neutral.

16.89 Floating water plantain appears to find suitable conditions throughout the Ashton Canal and the Islington Branch canal arm is likely to represent only a small proportion of this potential habitat area. Although individual plants are protected under the Habitat Regulations, the significance of these in relation to the population is relevant to the Defra licensing process in determining the level of detriment to the population of the species concerned. Without the Islington Branch, the Ashton Canal SBI would still maintain a colony of the species. Still, precautionary principles suggest that until the actual baseline of the canal arm populations is known in relation to the wider context, this should be regarded as a large adverse impact. On the basis of previous anecdotal records, the population in the canal arm is probably small, because the species was not observed in 2004. If the plant is found to be present, this impact significance would be confirmed; if not, then the Phase 2 proposals would have no impact upon this receptor.

16.90 With regard to boat traffic in the canal arm, negative impacts are likely to be reduced if the measures outlined in Appendices 9 and 10 are in place. Residual impacts are likely to be improved from large adverse by these mitigation measures, possibly to neutral, or better if new colonies are established. Slight positive impacts for nature conservation may be accrued if all (or most) of the canal arm is set aside as a 'wildlife reserve', and the site managed and monitored for the species. The development/implementation of mitigation measures and Defra licensing procedures will be supervised by a suitably experienced ecologist.

Grasswrack pondweed

16.91 Impacts on grasswrack pondweed from dewatering of the canal arm are likely to be reduced from large adverse to slight adverse or neutral with the implementation of an appropriate method for dewatering works, similar to that required for the floating water plantain Defra licence. In fact, many of the protection measures will be similar. Again, the development and implementation of mitigation measures will be supervised by a suitably experienced ecologist.

16.92 In terms of shading, this colony is one of 3 significant ones known in Greater Manchester, and thus represents an important nature conservation asset for the area. If the colony was lost, this would affect the integrity of the Ashton Canal SBI. The Phase 2 outline designs indicate a severe shading effect on the core area of the colony (approximate area shown on Figure 2) resulting in an impact significance of large adverse without mitigation.

16.93 Although the design details for Block C have not been finalised, the siting is now fixed as part of the outline planning application. Detailed design may improve the light getting to the northern end of the canal arm (e.g. by changing building shape from rectangular to parallelogram). However, the parts of the colony located in the full shadow of Block C are likely to suffer, and the impact remains large adverse without mitigation in place. The most appropriate mitigation for this level of impact will be to establish a minimum of 2 additional colonies, as outlined in Appendix 16.9. This would also help Greater Manchester and British Waterways to meet their BAP targets of expanding the species' range. With such sites successfully established, the impact significance could be reduced to neutral or slight positive if all the 3 colonies survived.

16.94 Regarding the effects of increased boat traffic stirring up silt in the canal arm, these will be reduced by incorporation of other measures described in Appendix 16.9. There is a strong need to establish both grasswrack pondweed's and floating water plantain's response to shading by Block C separately to that caused by boats. The Appendix 16.9 Strategy allows for these impacts to be separated, at least in situations where the shading effect from Block C is acute. As some aquatic plants may take years to respond to changes in water chemistry (Lansdown and Wade 2003), where a slow (chronic) decline occurs, changes could be harder to detect in just 2 years. Whether shading triggers a rapid or a slow response in these two species is not known. Therefore ongoing monitoring must extend beyond this period. Overall, residual impacts are likely to be improved from large adverse by these mitigation measures, possibly to neutral or even slight positive.

Breeding birds

16.95 Safeguard measures are discussed above under impact magnitude and significance. In order to minimise the direct effects of the development upon breeding birds in this development, scrub and vegetation clearance will take place during the winter months to discourage bird breeding, and the site will also be checked by a suitably experienced ecologist for nesting birds prior to commencement of development in July.

16.96 The loss of existing scrub habitats on site would be mitigated to some extent by the new opportunities presented by the landscaping intended for the site. With this in place the net impact would be neutral at worst, although the bird species assemblage attracted to the new habitats may be different.

Summary of Proposed Mitigation

16.97 In summary, the following mitigation measures will be included:

- Lighting provision to minimise impact upon bat flight paths along canal and canal arm, e.g. avoid feature lighting of canal, use low-level 'bollard' style lighting.
- All scrub vegetation will be cleared as soon as possible and definitely before March to avoid delays caused by birds breeding on the site. The site will also be re-checked by a suitable experienced ecologist for breeding bird activity to ensure that none is present immediately prior to commencement of works.
- Dewatering of canal arm requires a Defra licence because of floating water plantain. This includes a detailed Method Statement of how works will be carried out to avoid detriment to or loss of plants in canal arm and may include temporary relocation during Phase 2 works. It takes time to prepare and get approved by Defra (allow at least 2 months). Mitigation for grasswrack pondweed would be incorporated in this because, although it does not require licensing *per se*, the colony is important and must be safeguarded. Defra licence application must be prepared by a suitably experienced ecologist, and works therein overseen by the same.

- Strategy outlined in ES Ecology Section Appendix 16.9 will be followed, including input to detailed design for Phase 2, provision and positioning of silt screen, monitoring of canal arm rare plants for 7 years pre, during and post development, on-going monitoring thereafter (duration and frequency to be agreed), investigation and establishment of 2 additional colonies of grasswrack pondweed. All under the supervision of a suitably experienced ecologist.

16.98 In addition, the following measures will be offered as enhancements to the development for ecology:

- Black redstart - include suitable features for nesting and feeding.
- Bats - install artificial roosts along canal frontage of buildings.

16.99 It may also be possible to offer interpretation of the canal's ecological importance as part of the landscaping proposals.

Conclusions and Residual Impacts

16.100 If the safeguards and mitigation described above is followed in full, the resulting impacts from the development, in its three phases, are minimised.

16.101 Phase 1 results in overall residual impacts ranging from slight adverse to slight positive. The main impacting activity is canal de-watering, but as this is a temporary and short-lived activity, impacts can be managed acceptably. Overall the impact is likely to be neutral to slight positive with regard to nature conservation.

16.102 Phase 3 also has minimal impact upon the nature conservation assets of the site, and residual impacts are rated at neutral to slight positive. Overall the impact of this phase is neutral at worst. Slight positive impacts are attainable through incorporation of enhancement measures for bats and black redstart.

16.103 Phase 2 contains the most potential to impact the nature conservation assets of the Islington Branch canal arm in a negative way, with issues centred around the canal arm's vegetation. As in Phase 1, the issues around canal dewatering can be resolved, while following the Defra licensing process. The remaining issues are shading of the European protected species floating water plantain and nationally scarce grasswrack pondweed from Block C and shading caused by increased sediment disturbance from increased boat traffic. Together these two impacts are likely to have increased negative impacts. Without mitigation, impacts from the development are likely to be of large adverse significance for both species. However, a detailed list of measures has been included as mitigation, and adherence to this Strategy (presented in Appendices 16.9 and 16.10) resolves residual impacts to neutral to slight positive.

References

- Byron, H. 2000. *Biodiversity and Environmental Impact Assessment: A Good Practice Guide for Road Schemes.* The RSPB, WWF-UK, English Nature and the Wildlife Trusts, Sandy.
- Cranswick, P., 1998. *Bird Monitoring Methods.* RSPB, Bedfordshire.
- DETR, 1998. A New Deal for Trunk Roads in England: Guidance on the new approach to appraisal. Department of the Environment, Transport and the Regions: London.
- Eaton, M. A., D. G Noble, P. A. Cranswick, N. Carter, S. Wooton, N. Ratcliffe, A. Wilson, G. M. Hilton and R. D. Gregory, 2003. The State of the UK's Birds 2003. British Trust for Ornithology, the Royal Society for the Protection of Birds and Wildfowl and Wetlands Trust, Sandy.
- English Nature, 2004. Bat Mitigation Guidelines. English Nature, Peterborough.
- English Nature, 1999. Bat Worker's Manual. English Nature, Peterborough.
- Greater Manchester Ecology Unit, March 2003. Greater Manchester Biodiversity Action Plan.
- Institute of Environmental Assessment, 1995. *Guidelines for Baseline Ecological Assessment*. Chapman and Hall, London.
- Lansdown, R. V. and P. M. Wade, 2003. *Ecology of Floating Water-plantain.* Conserving Natural 2000 Rivers Ecology Series No. 9. English Nature, Peterborough.
- Joint Nature Conservation Committee, 1990. *Handbook for Phase 1 Habitat Survey - A technique for environmental audit*. JNCC, Peterborough.
- Joint Nature Conservation Committee, 1994. *Scarce Plants in Britain.*
- Joint Nature Conservation Committee, 2004. The UK BAP, Species and Habitat Action Plans. www.ukbap.org.uk.
- Preston, Pearman and Dines, 2002. *New Atlas of the British Flora*. Oxford University Press.
- Ratcliffe, D.A., 1977. *A Nature Conservation Review*. Cambridge University Press.
- Regional Biodiversity Steering Group for North West England, 1999. A Biodiversity Audit of North West England.
- Rydell, J., 1992. Exploitation of insects around streetlamps by bats in Sweden. *Functional ecology* 6:744-750.
- Rydell, J. and Baagoe, H. J., 1996. *Bats and Streetlamps*. www. batcon.org/batsmag/v14n4-4.

- Savidge, J. P., V. H. Heywood and V. Gordon, 1963. Travis's Flora of South Lancashire. Liverpool Botanical Society.
- Willby, N. J. and J. W. Eaton, 1993. The distribution, Ecology and Conservation of *Luronium natans* (L.) Raf. In Britain. J. Aquat. Plant Manage. **31**: 70-76.

Summary of Impacts

16.104 The potential impacts, proposed mitigation and residual impact are summarised in the following tables, Figure 16.3-16.5.

Figure 16.3. Summary Impact Assessment and Outline of Proposed Mitigation Measures - Phase 1

Ecological Receptor	Nature of Impact	Probability	Duration	Ecological Value	Magnitude	Significance	Safeguard and Mitigation measures	Residual impacts
Bats	Direct: Potential roost loss in existing site buildings	None – no roosts present	Permanent	B	Neutral	Neutral	Install bat roost provision in new buildings	Slight Positive
	Indirect: increased night-time lighting	High	Permanent	B	Intermediate negative	**Large adverse**	(i) Avoid 'feature' lighting of canal (ii) Use low-level bollard lighting for footpaths	Neutral
Black redstart	Direct: potential loss of buildings and terrestrial habitats	Low – none found	Permanent	B	Neutral	Neutral	Incorporate suitable nest and feeding habitats in new buildings	Slight Positive
Floating water plantain	Direct: damage or loss of plants during dewatering	High	Temporary	B	Intermediate negative	Large adverse	(i) Follow Defra licensing procedure incl. Method Statement (ii) survey before works so plants can be safeguarded (iii) monitor post dewatering	Neutral to slight positive, as plant can benefit from slight disturbance
Grasswrack pondweed	Direct: damage or loss of colony during dewatering	High	Temporary	C	Major negative	**Large adverse**	(i) method for works to contain safeguard for colony (ii) monitor post dewatering	Slight adverse to neutral
Breeding birds	Direct: disturbance during site clearance	High	Temporary	D	Minor negative	**Slight adverse**	Avoid bird breeding season March-August inclusive	Neutral

Ecological Receptor	Nature of Impact	Probability	Duration	Ecological Value	Magnitude	Significance	Safeguard and Mitigation measures	Residual impacts
	Indirect: disturbance from site construction traffic	High	Temporary	D	Minor negative	Slight adverse	Clear habitats before bird breeding starts, to discourage nesting	None
	Direct: loss of habitat in scrub	High	Permanent	D	Major negative	Large adverse	Landscape planting will contain new habitats for invertebrates and birds	Neutral

Figure 16.4. Summary Impact Assessment and Outline of Proposed Mitigation Measures - Phase 2

Ecological Receptor	Nature of Impact	Probability	Duration	Ecological Value	Magnitude	Significance	Safeguard and Mitigation measures	Residual impacts
Bats	Direct: Potential roost loss	None – no roosts present	Permanent	B	Neutral	Neutral	Install bat roost provision in new buildings	Slight Positive
	Indirect: increased lighting of canal	High	Permanent	B	Intermediate negative	**Large adverse**	(i) Avoid 'feature' lighting of canal (ii) Use low-level bollard lighting for footpaths	Neutral
Black redstart	Direct: potential loss of buildings and terrestrial habitats	Low – none found	Permanent	B	Neutral	Neutral	Incorporate suitable nest and feeding habitats in new buildings	Slight Positive

Ecological Receptor	Nature of Impact	Probability	Duration	Ecological Value	Magnitude	Significance	Safeguard and Mitigation measures	Residual impacts
Floating water plantain	Direct: damage or loss of plants during dewatering	High	Temporary	B	Intermediate negative	Large adverse	(i) Follow Defra licensing procedure inc. Method Statement (ii) survey before works so plants can be safeguarded (iii) monitor post dewatering	Neutral to slight positive, as plant can benefit from slight disturbance
	Indirect: increased shading from new buildings	High	Permanent	B	Intermediate negative	Large adverse	Adhere to Strategy, Appendix 16.9	Neutral to Slight positive
	Indirect: shading from increased turbidity from boat traffic	High	Permanent	B	Intermediate negative	Large adverse	Adhere to Strategy, Appendix 16.9	Neutral to Slight positive
Grasswrack pondweed	Direct: damage or loss of colony during dewatering	High	Temporary	C	Major negative	**Large adverse**	(i) method for works to contain safeguards for colony (ii) monitor post dewatering	Slight adverse to neutral
	Indirect: increased shading from new buildings	High	Permanent	C	Major negative	**Large adverse**	Adhere to Strategy, Appendix 16.9	Neutral to Slight positive
	Indirect: shading from increased turbidity from boat traffic	High	Permanent	C	Major negative	**Large adverse**	Adhere to Action Plan, Appendix 16.9	Neutral to Slight positive

Ecological Receptor	Nature of Impact	Probability	Duration	Ecological Value	Magnitude	Significance	Safeguard and Mitigation measures	Residual impacts
Breeding birds	Direct: disturbance during site clearance	High	Temporary	D	Minor negative	**Slight adverse**	Avoid bird breeding season March-August inclusive	Neutral
	Indirect: disturbance from site construction traffic	High	Temporary	D	Minor negative	**Slight adverse**	Clear habitats before bird breeding starts, to discourage nesting	None
	Direct: loss of habitat in scrub	High	Permanent	D	Minor negative	**Slight adverse**	Landscape planting will contain new habitats for invertebrates and birds	Neutral

Figure 16.5. Summary Impact Assessment and Outline of Proposed Mitigation Measures - Phase 3

Ecological Receptor	Nature of Impact	Probability	Duration	Ecological Value	Magnitude	Significance	Safeguard and Mitigation measures	Residual impacts
Bats	Direct: Potential roost loss	None – no roosts present	Permanent	B	Neutral	Neutral	Install bat roost provision in new buildings	Slight Positive
	Indirect: increased lighting of canal	High	Permanent	B	Intermediate negative	**Large adverse**	(i) Avoid 'feature' lighting of canal (ii) Use low-level bollard lighting for footpaths	Neutral
Black redstart	Direct: potential loss of buildings and terrestrial habitats	Low – none found	Permanent	B	Neutral	Neutral	Incorporate suitable nest and feeding habitats in new buildings	Slight Positive

Ecological Receptor	Nature of Impact	Probability	Duration	Ecological Value	Magnitude	Significance	Safeguard and Mitigation measures	Residual impacts
Floating water plantain	Indirect: shading from increased turbidity from boat traffic	High	Permanent	B	Intermediate negative	Large adverse	Adhere to Action Plan, Appendix 16.9	Neutral to Slight positive
Grasswrack pondweed	Indirect: shading from increased turbidity from boat traffic	High	Permanent	C	Major negative	**Large adverse**	Adhere to Action Plan, Appendix 16.9	Neutral to Slight positive
Breeding birds	Direct: disturbance during site clearance	High	Temporary	D	Minor negative	**Slight adverse**	Avoid bird breeding season March-August inclusive	Neutral
	Indirect: disturbance from site construction traffic	High	Temporary	D	Minor negative	**Slight adverse**	Clear habitats before bird breeding starts, to discourage nesting	None
	Direct: loss of habitat in scrub	High	Permanent	D	Minor negative	**Slight adverse**	Landscape planting will contain new habitats for invertebrates and birds	Neutral

17. Air Quality

Introduction

17.1 This Chapter has been prepared by Ove Arup and Partners Ltd and addresses the potential air quality effects associated with the proposed redevelopment at Islington Wharf. It is intended that this Chapter addresses both potential vehicular impacts on air quality associated with the operational phase of the development and nuisance associated with fugitive dust generated during the construction phase.

17.2 The proposed development site is located on the edge of Manchester City Centre within an area which is undergoing extensive redevelopment. This area is within Manchester's inner relief road and located to the north east of the city centre. The proposed development is currently scheduled for completion by 2010 / 2011.

17.3 The site is adjacent to a redevelopment initiative incorporating a mix of uses which include residential and commercial development. These include the development known as 'New Islington', the anticipated completion date being 2015. In order to assess the potential cumulative effects of the proposed development and New Islington, the effect of both schemes has been considered within this Chapter.

17.4 The proposed development site is within an 'Air Quality Management Area' established by Manchester City Council for the management of certain air pollutants following a review and assessment process.

17.5 The proposed development site is largely vacant, with a small area used by British Waterways for storage purposes. It is bounded by Great Ancoats Street, Old Mill Street, the Ashton Canal and Vesta Street. The development comprises a mixed-use scheme, predominantly comprising residential with some retail, food and drink and office uses. This ES addresses two scheme options (see Description of Proposals section) known as Options I and II. Option II includes a 104 bed hotel occupying space throughout all floors of a 12 storey building. The hotel entrance will be located on the ground floor. This air quality assessment therefore addresses both Options I and II in turn.

17.6 Martin Stockley Associates have provided traffic data for the proposed development which has informed this air quality assessment. Consultations have also been undertaken with Manchester City Council with a view to confirming the approach to the air quality assessment.

17.7 The aims and objectives of this air quality assessment were to determine the impact upon air quality associated with the traffic generated as a consequence of the operational phase of the development (under both Options I and II) and the likely air quality environment likely to be experienced by those users of the development.

17.8 Discussions have been held with Environmental Health Officers at Manchester City Council to confirm the approach to the assessment. In addition, an EIA Scoping Report has been submitted to Manchester City Council planners outlining the scope of work to be undertaken within this EIA.

17.9 The EIA Scoping Report identified that the approach to the assessment was to be consistent with the requirements of the Design Manual for Roads and Bridges (DMRB) Volume 11, *Environmental Assessment*, February 2004.

Potential Impacts

17.10 The principal potential air quality impacts associated with the development would be related to the movement of private vehicles for residents, movements of vehicles related to drop-off for hotel users under Option II (there is no on-site car parking provision) and movement of vehicles for the retail unit on the corner of Great Ancoats Street and Old Mill Street.

17.11 The principal road traffic pollutants that influence local air quality include:

- Particulate matter, particularly fine particulate matter (PM_{10});
- Nitrogen oxides (NO_x), in particular nitrogen dioxide (NO_2);
- Carbon monoxide (CO);
- Volatile Organic Compounds (VOCs), particularly benzene and 1,3 butadiene.

17.12 Prolonged exposure to traffic pollutants at high concentrations may induce adverse effects upon human health, especially amongst vulnerable groups such as the elderly and those with respiratory problems.

Methodology, Air Quality Regulatory Framework and Terms of Reference

17.13 The principal air quality policies and regulations of relevance to the proposed development are described below.

17.14 The land use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality consideration that relates to land use and its development can be a material planning consideration in the determination of a planning application.

17.15 Planning policies particularly relevant to air quality management are set out in Planning Policy Guidance (PPG) notes and Planning Policy Statements (PPS). Those of particular relevance to this scheme are PPG13 (Transport, 2001) and PPS23 (Planning and Pollution Control, 2004).

17.16 A revised version of PPG13 was published in March 2001, updating the Government's transport planning policies, with an objective of delivering an integrated transport policy. PPG13 states that air quality management is a key consideration in linking development control and transport planning objectives. This is particularly relevant in areas where the Government's national air quality objectives are not expected to be met and where air quality action plans are formulated.

17.17 New planning guidance advising on pollution control matters was launched in November 2004. Planning for Pollution Control (PPS23) provides guidance on the mechanism for major new systems for pollution control and management of contaminated land, in terms of considering proposals for development. Key policy aims of PPS23 are to support planning for good quality, sustainable development which takes account of pollution control issues. Local authorities are required to have regard to the policies in PPS23 in the preparation of local development documents. Regional planning authorities are also required to have regard to PPS23 in the preparation of regional spatial strategies, and in the consideration of individual proposals for development. A key requirement is that planners ensure that developers have taken appropriate account of the potential for pollution an contaminated land, have undertaken necessary investigations and have reflected the results of these investigations within the proposals.

17.18 Policy guidance note LAQM.PG(03) (DEFRA, 2003) provides additional guidance on the links between transport and air quality. PG(03) describes how road transport contributes to local air pollution and how transport planning measures may bring improvements in air quality. In addition, the guidance advises that air quality considerations should be integrated with the planning process at the earliest stage, and is intended to assist local authorities in developing action plans to deal with specific air quality problems, and to create strategies to improve air quality generally. PG(03) summarises the main ways in which the land use planning system can help deliver air quality objectives.

Air Quality Objectives and Limit Values

17.19 Air quality limit values and objectives are quality standards for clean air. They can be used as assessment criteria for determining the significance of any potential changes in local air quality resulting from a proposed development.

17.20 European Union (EU) air quality policy sets the scene for national policy. The EU air quality 'framework' Directive on Ambient Air Quality Assessment and Management came into force in September 1996 and is intended as a strategic framework for tackling air quality consistently, through setting European-wide air quality limit values in a series of 'daughter directives', superseding and extending existing European legislation. Three daughter directives[3] have been placed into national legislation[4] the third[5] being enacted during September 2003[6]. A fourth directive, relating to levels of specific heavy metals and polycyclic aromatic hydrocarbons (PAH) is still under consideration.

17.21 In a parallel national process, the Environment Act was published in 1995. The Act required the preparation of a national air quality strategy setting air quality standards and objectives for specified pollutants and outlining measures to be taken by local authorities (through the system of Local Air Quality Management (LAQM)) and by others 'to work in pursuit of the achievement' of these objectives.

17.22 A National Air Quality Strategy (NAQS) was published in 1997 and subsequently reviewed and revised in 2000, as the Air Quality Strategy for England, Scotland, Wales and Northern Ireland[7] and an addendum to the Strategy was published in 2002[8]. The objectives that are relevant to local air quality management have been set into Regulations[9].

17.23 Some pollutants have standards expressed as annual average concentrations due to the chronic way in which they affect health or the natural environment i.e. effects occur after a prolonged period of exposure to elevated concentrations and others have standards expressed as 24 hour, one hour or 15 minute average concentrations due to the acute way in which they affect health or the natural environment i.e. after a relatively short period of exposure. Some pollutants have standards expressed in terms of both long-term and short-term concentrations e.g. nitrogen dioxide and PM_{10}.

17.24 Figure 17.1 sets out these EC air quality limit values and national air quality objectives for the main pollutants relevant to this study.

---

[3] First Daughter Directive: Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air (1999/30/EC), amended by Commission Decision 2001/744/EC; Second Daughter Directive: Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air (2000/69/EC)

[4] Air Quality Limit Values Regulations 2001 (SI2315) and Air Quality Limit Values (Amendment) Regulations 2002 (SI3117)

[5] Third Daughter Directive: Directive 2002/3/EC of the European Parliament and of the Council of 12 February 2002 relating to ozone in ambient air (2002/3/EC)

[6] The Air Quality Limit Value Regulations 2003, SI 2121

[7] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department of Environment, Transport and the Regions, The Stationery Office, January 2000

[8] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Addendum, Department for Environment, Food and Rural Affairs (DEFRA), The Stationery Office, February 2003.

[9] Air Quality (England) Regulations 2000 and Air Quality (England) (Amendment) Regulations 2002

Figure 17.1: EC Air Quality Limit Values and National Air Quality Objectives

Pollutant	Averaging Period	Objective/ Limit Value	Compliance Date	Basis
Carbon monoxide	Running 8 hour mean	10.0 mg/m^3	31 Dec 2003	National
Benzene	Running annual mean	16.25 $\mu g/m^3$	31 Dec 2003	National
		5.0 $\mu g/m^3$	31 Dec 2010	National
Nitrogen dioxide (NO_2)	1 hour mean	200 $\mu g/m^3$ (105ppb), not to be exceeded more than 18 times a year (99.8^{th} percentile)	31 Dec 2005	National
			1 Jan 2010	EU
	Annual mean	40 $\mu g/m^3$	31 Dec 2005	National
			1 Jan 2010	EU
Particulate matter (PM_{10}) Measurement technique: gravimetric	Daily mean	50 $\mu g/m^3$, not to be exceeded more than 35 times a year (90th percentile)	31 Dec 2004	National
			1 Jan 2005 (Stage 1)	EU
		50 $\mu g/m^3$, not to be exceeded more than 7 times a year (98th percentile)	31 Dec 2010	National excluding London and Scotland*
		50 $\mu g/m^3$, not to be exceeded more than 10 times a year (97.3^{th} percentile)	31 Dec 2010	National excluding London*
		50 $\mu g/m^3$, not to be exceeded more than 7 times a year (98th percentile)	1 Jan 2010 (Stage 2)	EU
	Annual Mean	40 $\mu g/m^3$	31 Dec 2004	National
			1 Jan 2005 (Stage 1)	EU

Pollutant	Averaging Period	Objective/ Limit Value	Compliance Date	Basis
		20 $\mu g/m^3$	31 Dec 2010	National excluding London and Scotland*
			1 Jan 2010 (Stage 2)	EU
		23 $\mu g/m^3$	31 Dec 2010	National excluding London*

* These areas are not yet included in the Regulations

17.25 Performance against these objectives is monitored where people are regularly present and might be exposed to air pollution and it is the responsibility of each local authority to undertake such duties. Each local authority is required to undertake a review and assessment of local air quality. The process considers the current air quality conditions and the likely future air quality situation to the end of 2005, assessing whether the prescribed objectives are likely to be achieved by their target dates.

Methodology and Terms of Reference

17.26 The aim of the assessment was to undertake an air quality screening exercise of positions (identified hereinafter as receptors) within the proposed development (under Options I and II) based on the methodology described in the Design Manual for Roads and Bridges, Volume 11, *Environmental Assessment*. The methodology adopted for the assessment is a screening exercise used to determine the traffic contribution to pollutant levels and that experienced (or likely to be experienced under predicted scenarios) for nominated receptors. The methodology selected is complementary to the Pollutant Specific Guidance Note (TG4) (DETR, 1999) for use with Local Air Quality Management. It is conventionally used for the EIA of development projects which have an influence upon, or are influenced by, road traffic. The results of the assessment are indicative of any receptors which may experience an exceedances of Air Quality Objectives and how this might change as a result of changes in traffic flow and composition.

General Approach

17.27 A proposed development that generates traffic can affect air quality in two ways:

- Firstly, there may be localised changes in pollutant concentrations, either improvement or deterioration, along all or part of the application site and the existing road network;
- Secondly, there may be changes in the total quantity of emissions from traffic on the local road network.

17.28 In order to address the first of these, the DMRB recommends a screening technique to predict future pollution concentrations at given locations (receptors) along a road (usually residential or sensitive public properties such as schools and hospitals) where the public may be exposed to pollutants for periods of time relevant to the air quality objectives. Industrial and other occupational premises are not therefore usually included in this category.

17.29 The pollutants that can be modelled in this way are carbon monoxide, nitrogen dioxide, benzene, fine particulates (PM_{10}) and 1,3 butadiene. The outputs from the model may be compared directly with the UK's air quality objectives.

17.30 Due reference has been made to the Manchester City Council Air Quality Review and Assessment (1999) in undertaking this assessment.

17.31 The magnitude of the predicted impacts were considered under three scenarios:

- A baseline situation set at 2004 (during which the primary traffic model and the scheme masterplan was adopted)
- A future year without the scheme (2010) to illustrate the performance of the area in air quality terms and expressed in terms of Air Quality Objectives
- A future year with the scheme (2010) (expressed in terms of the Air Quality Objectives based on the current iteration of the masterplan.

17.32 The 2010 with and without scheme scenarios have included traffic flows associated with the proposed New Islington development effectively providing a revised baseline in terms of the total traffic utilising the road network. Therefore, the potential cumulative effects of committed development and the proposed redevelopment of the subject site have been considered.

17.33 The DMRB method differentiates between emissions from heavy and light duty vehicles and assigns conversion factors to future years to take account of changes in emission control technology and its predicted take up by the vehicle fleet.

17.34 The information required for the DMRB predictive method is as follows:

- The identification of properties and locations (receptors) to be modelled and their distance from the centre line of all roads within 200 m;
- Annual average daily traffic flow figures (AADT);
- Annual average flow weighted traffic speeds (km/hour) derived from 7 day, 24 hour average counts (thereby including the off-peak high speeds in addition to the peak hour speeds);
- Percentage of heavy duty vehicles in the traffic flows.

17.35 Five receptor positions were identified, within and without the scheme boundary. Predictions were made for the current 2004 baseline scenario, with future projections for 2005 and 2010 as 'air quality objective' years established under the Air Quality Regulations for the following locations:

- Proposed location of residential block A on Great Ancoats Street (Receptor 1);
- Proposed location of residential block B on Ashton Canal (Receptor 2);
- Proposed location of residential block C on Canal Arm (Receptor 3);
- Proposed location of residential block D on Old Mill Street (Receptor 4);
- Proposed location of residential block E on Vesta Street (Receptor 5).

Technical Assumptions and Data Limitations

17.36 The following assumptions were incorporated into the model:

- Forecasts of future vehicle fleet composition are based on historic trends and ongoing changes in emissions control technology in order to satisfy more stringent legislation;
- The forecast year is 2010 linked to Air Quality Objectives;
- Distances from receptors to the centre of the road and kerb of road have been estimated and are given to the nearest half metre;
- Annual average daily traffic flows (AADT) have been converted from Peak Hourly Flows (PHF) using a conversion coefficient of 10[10];
- Traffic generated air pollutants would have an impact only on receptors within 200m i.e. the links considered were only those within 200m of the receptor position;

[10] Details provided by Martin Stockley Associates.

- Both Options I and II have been considered in turn within the assessment.

17.37 The following links have been identified as being likely to contribute to an impact on air quality in the area:

- Great Ancoats Street (west);
- Old Mill Street (north).

Baseline Conditions

17.38 This section describes the existing air quality in the vicinity of the scheme to provide a context for the study. In order to assess the potential changes in air quality associated with the proposed development, it is necessary to understand the ambient air quality. Ambient air quality refers to the concentration of air pollutants that are already present in the local environment. These are present due to various emissions, such as industrial processes, commercial and domestic activities, traffic and natural sources. Data on existing air quality has been obtained from the following sources:

- Manchester City Council Stage 1, 2 and 3 Air Quality Review and Assessment
- Monitoring Data from the National Air Quality Archive.

Local Authority Air Quality Review and Assessment

17.39 Under the requirements of the Environment Act 1995 Part IV, local authorities are required to periodically review and assess whether Air Quality Strategy Objectives are being met. These 'air quality review and assessments' were initially carried out in three stages, with the third and most detailed stage only undertaken where previous stages had identified pollutants for which air quality objectives were exceeded. Where the third stage assessment demonstrated that air quality objectives were still being exceeded then the local authority was required to declare an 'Air Quality Management Area' (AQMA) covering the area of concern and an Air Quality Action Plan (AQAP) of measures to improve air quality.

17.40 Manchester City Council carried out and published a joint stage 1 and 2 Air Quality Review in 1999. The results of that review indicated that the air quality objectives for benzene, carbon monoxide, lead, sulphur dioxide and 1,3 butadiene would not be exceeded in 2005 (a compliance data under the Air Quality Regulations). However, it appeared that the objectives for NO_2 and PM_{10} could well be exceeded in 2005 and a Stage 3 Assessment was undertaken. The Stage 3 Assessment resulted in an Air Quality Management Area (AQMA) being declared covering most of central Manchester. The proposed development site is located within the AQMA.

Local Air Pollution Sources

17.41 Vehicular use of the adjacent roads to the development of Great Ancoats Street and Old Mill Street are the main local air pollution sources.

Background Pollutant Concentrations

17.42 The DMRB modelling procedure requires a value for background pollutant concentrations to take account of the emissions from sources other than vehicles on the roads modelled in the assessment. There are two key sources of information which may be used to identify suitable background concentrations including:

- Long term (annual) average pollution maps posted on the DEFRA National Air Quality Archive (NETCEN) on the internet; and
- Data from automatic monitoring sites in Manchester.

17.43 There are two Government-operated Automatic Urban Network sites in Manchester which have been reviewed for this assessment. These are an urban background station monitoring NO_2 and CO at Manchester Town Hall and an urban site at Piccadilly monitoring NO_2, CO, PM_{10}, SO_2 and ozone. Neither of these sites were considered representative of the proposed development site and have been discounted from the assessment.

17.44 In the National Air Quality Archive operated by the National Environmental Technology Centre (NETCEN), DEFRA has produced estimated background air pollution data for 2001 and projections for other years, for several pollutants. The estimated concentrations of carbon monoxides, benzene, NO_x, NO_2 and PM_{10} at the proposed development site for the baseline and assessment years are presented in the following figure.

Figure 17.2 Background Pollution Concentrations (Grid Reference Easting 385366, Northing 398274)

Pollutant	2001	2003	2004	2005	2010
CO (mg/m³)	0.515	0.43	0.39	0.36	0.25
Benzene (µg/m³)	1.17	1.03	0.97	0.92	0.8
PM_{10} (µg/m³)	24.2	23.2	23.2	22.63	21.1
NOx (µg/m³)	90.2	83.53	80.82	78.9	63.2
NO_2 (µg/m³)	42.9	40.67	39.1	38.3	33.5
1,3 Butadiene (µg/m³)	0.43	0.34	0.3	0.27	0.2

Source: http://www.airquality.co.uk/archive/laqm/tools.php?tool=background

Construction Assessment

17.45 The construction effects associated with the development have been considered through a qualitative assessment of potential sources of air pollution from construction activities and through the formulation of appropriate mitigation and control measures.

Operational Assessment

17.46 For the DMRB screening assessment, traffic data provided by Martin Stockley Associates were adopted for the base year (2004), and future year 2010 (do something) 'with scheme' and (do minimum) 'without scheme' scenarios. The modelling procedure required a value for background pollutant concentrations to take account of emissions from other sources other than vehicles on the roads modelled in the assessment. Thus, long-term (annual) average background concentrations were taken from the National Air Quality Archive as described previously. These were added to the predicted model results to determine if air quality objectives were likely to be met or exceeded following implementation of the Islington Wharf development.

17.47 The main pollutants of concern identified in the Manchester City Council Stage 3 Review and Assessment are nitrogen dioxide and PM_{10}. In total, four pollutants have been assessed: nitrogen dioxide; PM_{10}; carbon monoxide; and benzene.

Results of Analysis - Assessment of Impacts

Construction Effects

17.48 During most enabling earthworks there is a potential for releases of fugitive dust. Fugitive dust is the term given to surface dust that is entrained in the air. This can occur either due to wind erosion or mechanical action e.g. vehicle movements across an unsealed road. Dust dispersion and deposition can vary widely depending on prevailing weather conditions. Wind speed and wind direction, in tandem with dry weather conditions, strongly influence the magnitude and location of dust impacts. Potential risks would be associated with the earthworks contract and other dust-generating activities including demolition, concrete batching, vehicle movements on unmade roads and materials stockpiling. This could result in a localised, temporary deterioration in air quality. This potential impact would be short term and reversible. There are effective dust control measures that can be employed where necessary, including water spraying of unmade haulage roads. Provided that the site is properly managed during construction, it is considered that most fugitive dust can be controlled at source.

Operational Effects

17.49 The results of the graphical screening using DMRB is presented in the following figure for comparison with the air quality objectives described above. Figure 17.3 illustrates the results for both Option I and II.

Figure 17.3 Summary of Air Quality Modelling Results

Pollutant	**Nitrogen Dioxide**	**Particulate Matter (PM_{10})**	**Carbon Monoxide**	**Benzene**
Objective Value	Annual Mean	Annual Mean	8-Hour Running Mean	Annual Mean
Units	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	$\mu g/m^3$
Objective	40 (2005)	40 (2004) / 20 (2010)	10.0 (2003)	5.0 (2010)
Receptor 1Proposed Residential Block A on Great Ancoats Street (Option I)				
2004 Baseline	**47.6**	27.6	**0.53 (10.6)**	1.16
2010 Do Minimum	39.7	**23.7**	0.35 (7.0)	0.93
2010 Do Something	39.9	**23.8**	0.35 (7.0)	0.94
Receptor 1Proposed Residential Block A on Great Ancoats Street (Option II)				
2010 Do Minimum	39.7	**23.7**	0.35 (7.0)	0.93
2010 Do Something	40.0	**23.9**	0.35 (7.0)	0.94
Receptor 2 Proposed Residential Block B on Ashton Canal(Option I)				
2004 Baseline	**44.1**	25.7	**0.56 (11.2)**	1.19
2010 Do Minimum	37.1	**22.6**	0.30 (6.0)	0.87
2010 Do Something	37.2	**22.6**	0.31 (6.2)	0.88
Receptor 2 Proposed Residential Block B on Ashton Canal(Option II)				
2010 Do Minimum	37.1	**22.6**	0.30 (6.0)	0.87
2010 Do Something	37.2	**22.6**	0.31 (6.2)	0.88
Receptor 3 Proposed Residential Block C on Canal Arm (Option I)				
2004 Baseline	**42.7**	25.0	0.45 (9.0)	1.04
2010 Do Minimum	36.4	**22.3**	0.29 (5.8)	0.85
2010 Do	36.5	**22.3**	0.30 (6.0)	0.85

Pollutant	Nitrogen Dioxide	Particulate Matter (PM_{10})	Carbon Monoxide	Benzene
Something				
Receptor 3 Proposed Residential Block C on Canal Arm (Option II)				
2010 Do Minimum	36.4	**22.3**	0.29 (5.8)	0.85
2010 Do Something	36.6	**22.3**	0.30 (6.0)	0.86
Receptor 4 Proposed Residential Block D on Old Mill Street (Option I)				
2004 Baseline	**46.9**	27.2	**0.52 (10.4)**	1.13
2010 Do Minimum	39.4	**23.6**	0.34 (6.8)	0.92
2010 Do Something	39.7	**23.7**	0.35 (7.0)	0.93
Receptor 4 Proposed Residential Block D on Old Mill Street (Option II)				
2010 Do Minimum	39.4	**23.6**	0.34 (6.8)	0.92
2010 Do Something	39.8	**23.8**	0.35 (7.0)	0.93
Receptor 5 Proposed Residential Block E on Vesta Street (Option I)				
2004 Baseline	**43.0**	25.1	0.45 (9.0)	1.04
2010 Do Minimum	36.9	**22.5**	0.30 (6.0)	0.86
2010 Do Something	37.2	**22.6**	0.31 (6.2)	0.86
Receptor 5 Proposed Residential Block E on Vesta Street (Option II)				
2010 Do Minimum	36.9	**22.5**	0.30 (6.0)	0.86
2010 Do Something	37.2	**22.6**	0.31 (6.2)	0.86

Notes: Figures in bold represent a breach of the air quality objective value for the year in question (note each air quality objective value is set for a particular year). For CO, figures have been factored by 20 for comparison with air quality objective.

17.50 For all of the pollutants modelled, concentrations in 2010 are forecast to be lower than in 2004. This is because the pollutant emissions factors used in the model take account of expected improvements in vehicle emission control technologies over time and the increasing proportion of vehicles within the fleet that are installed with these control technologies.

Nitrogen Dioxide

17.51 Under the 2004 scenario, there are exceedances of the 40 $\mu g/m^3$ objective at all of the receptors chosen for the assessment. The range of values identified through the DMRB screening exercise is between 47.6 $\mu g/m^3$ and 42.7 $\mu g/m^3$. Given that Manchester City Council has established an Air Quality Management Area targeted at NO_2 (and PM_{10}) these results correspond with anticipated levels. The highest values are associated with the receptor position established for Great Ancoats Street. This is principally associated with the relatively high volumes of traffic utilising this part of Manchester's road network. There are no exceedances of the 2010 air quality objective at the predicted opening year of 2010. This may be largely ascribed to the predicted improvements in vehicle technology. The forecast values for the with scheme scenario are marginally higher than without for all receptors. It is not considered that these increases are significant. Traffic data adopted for the study indicates marginal differences between the with and without scheme scenarios and this is reflected in the air quality assessment. The traffic data also indicates only a marginal difference between Options I and II. The output from the DMRB model illustrates that both options produce similar effects on air quality when expressed in terms of NO_2.

Fine Particulate Matter (PM_{10})

17.52 All of the receptors modelled indicate compliance with the 2004 objective for the baseline year. The 2010 air quality objective for PM_{10} is more onerous than that for 2004. The background level of PM_{10} incorporated into the model exhibits a marginal exceedances of the air quality objective of 20 $\mu g/m^3$. As such, the addition of traffic related emissions of PM_{10} increases the level of exceedances. There is a marginal difference in predicted PM_{10} levels with and without the scheme at 2010 i.e. development induced traffic has a limited bearing on the predicted levels of PM_{10} at the air quality objective year. Both Options I and II have similar results when assessed in terms of PM_{10}. The impact of the scheme upon air quality, when expressed in terms of PM_{10}, is considered insignificant

Carbon Monoxide

17.53 For the purposes of comparing the 2003 objective and the output from the DMRB model for 2004 and 2010, the results of the carbon monoxide assessment have been factored by 20 as a 'worst case' increase. In applying this factor, there are marginal exceedances of the air quality objective at the objective year for receptors 1, 2 and 4. In all cases, at 2010, the air quality objective is complied with. The assessment of Options I and II produces similar results when considered in terms of carbon monoxide. There is a marginal difference in the with and without scheme scenarios for carbon monoxide. None of these are regarded as significant.

Benzene

17.54 The predicted annual mean benzene concentrations for 2010 with and without the development are within the air quality objective of 5.0 $\mu g/m^3$. There is no definable difference between Options I and II for Benzene.

Operational Assessment Summary

17.55 The DMRB model adopts a conservative approach and as such the emphasis of the assessment is upon the extent of any predicted changes in air quality as a consequence of the development. The results in the figure above indicate that there would be a very limited change in air quality with the redevelopment of the subject site when compared to the without scheme scenario. The introduction of the proposed development would not result in air quality objectives being compromised where future background air quality is not already anticipated to be compromised. The predicted effects of Options I and II are comparable i.e. no option is distinctly preferable over the other in air quality terms.

Proposed Mitigation

Construction Mitigation Measures

17.56 It is anticipated that the majority of dust emitting activities (including demolition activities) will be adequately controlled through effective site management and adverse effects can be greatly reduced or eliminated. Effective dust mitigation measures prevent dust becoming airborne or contain dust within enclosures to prevent dispersion beyond the emission source.

17.57 Prior to commencement of construction activities, it is intended that a Code of Construction Practice (CoCP), for each phase of the works, be agreed with Manchester City Council to ensure that the potential for adverse environmental effects on local receptors is avoided. These measures should be subject to a planning condition. This will include traffic routing, site access points and materials handling measures. The following measures for controlling dust and general pollution nuisance from the site construction operations will be included within the CoCP:

- Wheel washing facilities to prevent mud from construction operations being transported onto adjacent public roads
- Damping down of site haul roads during prolonged dry periods
- Regular cleaning of hard-surfaced site entrance roads
- Ensuring that dusty materials are stored and handled appropriately (e.g. wind shielding or complete enclosure, storage is away from site boundaries, drop heights of materials are restricted, water sprays are used where practicable to reduce dust emissions)

- Ensuring that dusty materials are transported appropriately (e.g. sheeting of vehicles carrying spoil and other dusty materials)
- Confinement of vehicles to designated haul routes within the site
- Restricting vehicle speeds on haul roads and unsurfaced areas of the site.

17.58 The traffic effect of the development during the construction period would be limited to a defined period and would be along traffic routes employed by haulage vehicles, construction vehicles and employees. Overall, construction effects on air quality will be minimised through the implementation of mitigation measures through the CoCP. This will significantly reduce the amount of dust that escapes from the site boundary and where construction activities are in very close proximity to sensitive receptors, additional dust control measures may be employed. Any construction effects on air quality would be temporary.

Operational Phase Mitigation Measures

17.59 The result of the assessment of air quality experienced at the receptors modelled above, including associated traffic, indicates that the scheme would have a limited effect on predicted air quality for 2010 under both Options I and II. In all cases, the traffic-related air quality effects associated with the scheme are not significant when compared to the 'without scheme' scenario. Therefore, no mitigation measures in relation to the operation of the development are necessary or proposed.

Conclusions and Residual Impacts

17.60 The air quality assessment has examined the existing air quality in the area of the proposed development, outlined relevant air quality standards and guidelines and assessed potential changes in air quality arising from the construction and operation of the scheme. Both Options I and II (including a hotel) have been considered.

17.61 The construction effects of the proposed development on local air quality would be principally dust nuisance events during the limited duration of construction activities. It is proposed that these be controlled through mitigation measures within an approved CoCP ensuring any adverse effects of the construction on local air quality are minimised or avoided.

17.62 Air quality impacts associated with the scheme in operation would primarily be from traffic. The operational effects on local air quality associated with the proposed redevelopment of the subject site (under either Option I or II) are not significant. No mitigation measures in relation to the operation of the development are proposed.

17.63 No long-term residual air quality effects are expected as a consequence of the construction or operation of the new development.

17.64 Slight adverse effects may be experienced as a result of construction of the scheme, although these would be temporary. No long-term residual effects are expected as a result of construction works.

17.65 No residual effects to local air quality are anticipated as a consequence of the scheme traffic once operational i.e. the impacts on air quality as a direct consequence of traffic associated with the scheme are considered insignificant. The scheme would not materially influence that status of the City's Air Quality Management Area.

Summary of Impacts

17.66 The following Figure 17.4 provides a summary of impacts for air quality associated with the construction and operational phases of the development.

Figure 17.4 Summary of Impacts (Air Quality)

Activity	Description of Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact	Comment
Construction	Nuisance associated with fugitive dust emission on existing local residents and other sensitive receptors	Negative	Short term / Reversible	Moderate / Local	Adoption of a Code of Construction Practice (CoCP) Damping down of site during dry weather Sheeting of vehicles Sensitive and considered location of dust-generating activities	Minor / Local	There are few existing sensitive receptors. Care must be exercised in reducing fugitive dust events to the Ashton Canal which may have a secondary adverse effect on water quality and biodiversity
Operation	Exceedence of air quality objectives associated with development-induced traffic Potential effects of air quality exceedances on local residents, pedestrians and other sensitive receptors	Negative	Long term	Negligible / Local	Not required	Negligible	An air quality assessment has been conducted in accordance with the requirements of DMRB Volume 11 *Environmental Assessment*. The assessment has demonstrated that the introduction of Islington Wharf, and associated traffic, would not compromise air quality objectives where these would not otherwise be compromised without scheme

18. TV and Radio Reception

Introduction

18.1 This Chapter considers the potential effects that the proposed development will have on television reception and radio reception based on an assessment prepared by Taylor Bros (Bolton) Ltd.

18.2 The detailed technical report to support this chapter can be found in Appendix 18.1.

Potential Impacts

18.3 Theory and practical experience has shown that large developments can have a disruptive effect on TV and radio reception.

18.4 The potential impacts of the development may include:

- Shadowing; and
- Reflection.

18.5 Any structure will produce two zones of potential disruption to television reception. One zone is where the development creates a 'shadow' and the other where it gives rise to a 'reflection'.

18.6 At the frequencies used for broadcasting, the processes of creating a 'shadow' or 'reflecting' are somewhat more complicated than with visible light, but thinking of the problem in these terms is still a helpful way of approaching the matter as set out below.

'Shadowing' effects

18.7 In an area behind the structure, the television transmitter is effectively screened from the viewer and the strength of the signal is reduced.

18.8 Television signals do not create such a 'hard' shadow as visible light, and for the purposes of explanation, a 'shadow' zone must be considered which is divided into three sub zones:

(i) Within a few tens of metres from a solid structure, over the region where optical view of the transmitter is lost, the reduction in signal strength is critically dependent on the specific design and composition of the structure. For most brick and concrete buildings the reduction is severe and in some cases almost total. For non-solid structures such as metallic lattice towers, the signal reduction is dependent on the density of the lattice and the wavelength of the signal.

(ii) Further away from the structure (i.e. beyond 250m, but this varies depending on its size) the limit of the 'shadow' zone and the signal reduction are determined by diffraction at the edges of the structure and reflection off surrounding structures. The simple coalition of whether or not a location has an optical view of the transmitter is not enough to classify the potential interference zone adequately. In general, the effect is that the signal appears to bend around the sides of the structure: the shadow zone reduces in size and the signal strength is reduced by much less than simple ray optics would suggest.

(iii) Even further away from the structure (i.e. 5km), complex multiple reflections and diffraction, caused by structures in the locality, may result in the 'shadow' zone becoming almost non-existent.

'Reflection' Effects

18.9 The second zone of potential interference is produced by 'reflection' or 'scattering' of the incident signal. Analogue reception is more likely to be affected than digital terrestrial reception, which is more robust.

18.10 As indicated in Appendix 18.1 the direct signal travels a distance D1 to the viewed, whilst the signal reflected from the structure travel slightly further, a distance D2 + D3. Even though television signals travel at the speed of light, the different path lengths can mean that one signal arrives with a significant delay relative to the other. This results in a second image appearing on the viewer's screen, displayed from the first. This type of interference is known as 'delayed image' or 'ghosting'.

Methodology and Terms of Reference

18.11 The BBC and Independent Television Commission (ITC) are keen to ensure that the disruption of both analogue and television reception is kept to a minimum.

18.12 As a first step, Ofcom was consulted for an independent view. Their letter stated the following:

"Taking into account the information supplied by you regarding the height and form of the buildings, and the external glass and metal panel cladding, it is possible that viewers in the vicinity of this development will have their television reception affected by the building's construction. The only way to obtain accurate information about the quality of existing reception is for a survey to be carried out."

Guidance Notes

18.13 Assessments of TV and Radio reception should be carried out in accordance with guidance outlined in: 'The Impact of Large Buildings and Structures (including Wind farms) on Terrestrial Television Reception.' (Appendix 18.1)

18.14 The aim of the guidance note is to ensure that architects, building developers and Planning Authorities are aware of the potential for problems. The guidance has been formulated by Ofcom.

18.15 Furthermore, Ofcom guidelines have been designed to be read alongside these papers.

18.16 A procedure for handling complaints of interference has been set by Ofcom, as covered by their booklet "Advice on Television and Radio Reception" (OF22).

18.17 It is difficult to predict the precise effects of new buildings, especially in the densely developed urban environment. Often, the only way to quantify the effects of a structure is to carry out a "before and after" reception survey.

18.18 Despite such drawbacks, especially the ability to undertaken an 'after' survey until the project is completed, there are appropriate methodologies that can be used to predict potential impacts.

Buildings Surrounding the Site

18.19 If the adjacent or nearby buildings are generally the same height or taller than the proposed development, there is unlikely to be any change to the TV reception.

18.20 However, if the building is taller then there is likely to be an effect, assuming residential properties are in close proximity to the development.

Baseline Conditions

18.21 A site survey has been carried out to ascertain affects that could be caused to TV and Radio reception in the local area due to the redevelopment of the subject site.

Radio Reception

18.22 Large structures have the capability of causing interference to medium and long wave radio signals, particularly where metal structures are used in the construction but this interference is usually only within the immediate area of the building.

18.23 VHF (FM) reception is less prone to such interference and again in this case domestic radio reception should not be affected.

18.24 A selection of FM radio channels receivable in the local area have been recorded.

TV Reception

18.25 The beam path (direction) for television aerials located in the surrounding area is to the northwest where the Winter Hill Tx is sited.

18.26 A test was made for an alternative transmitter. No alternative transmitter could be received of an acceptable quality or strength.

Rebroadcast Links (RBL)

18.27 Infill and relay transmitters receive their feed from a main transmitting station. This feed is usually an "off air" signal but in some cases a microwave link is used.

18.28 If this RBL is disrupted the relay transmitter will be affected either by receiving a poor signal or in some cases no signal at all.

18.29 In the case of Islington Wharf, Old Mill Street, Manchester, the proposed development is not in line with any known RBL.

Results of Analysis - Assessment of Impacts

TV and Radio Reception

18.30 Properties located to the southeast of the proposed site whose aerial beam path crosses through or in close proximity to the proposed site would experience some impairment to the TV reception. This is because the Winter Hill Tx is located to the northwest of the subject site.

18.31 A large proportion of the surrounding area is industrial and commercial in use. These areas are located to the north, northwest, west and east of the proposed development.

18.32 During the survey it was noticed that there are only a small amount of TV aerials visibly sited on individual commercial units.

18.33 The main residential area close to the proposed development is located to the southeast. The survey shows that this area already has impairments to TV reception due to existing obstructions. They are as follows:

- Land undulation - the ground height decreases from Every Street to Palmerston Street subsequently causing impairments to TV reception.
- Existing buildings located on Pollard Street and Carruthers Street varying in height from 4 storey to 8 storey and located on the higher ground are acting as existing obstructions to TV reception from the Winter Hill Tx.
- A new construction site is in progress located in the area of the Old Vulcan Works off Great Ancoats Street. Operating on this site are high level cranes. These cranes are having adverse affects on TV reception to properties in the surrounding area and have been noted on several occasions throughout the survey. See Appendix 18.1.

18.34 The existing buildings located along Pollard Street will shadow the proposed site from a large portion of the residential area located to the southeast of the proposed development. This will reduce any affects caused to TV reception by the proposed site to the residential area located to the southeast.

18.35 Given the points mentioned in conclusions and the test results recorded during the survey, an area - on Map 1, has been plotted showing where it is envisaged that impairment to TV reception could occur. See Appendix 18.1.

18.36 When high level cranes are used on the site they could cause interference to TV reception on a larger scale than the completed proposed building. This interference would be for the duration of time that the cranes are present and hence would be limited to the construction phase only.

Proposed Mitigation

18.37 For the reasons set out above, it is not possible to be conclusive about the effects on TV and Radio reception until the buildings are constructed. Therefore it is not possible to be conclusive as to whether or not there will be a significant effect which will need to be mitigated.

18.38 However, if there is an effect, then mitigation measures may be implemented. These could include:

- Change of aerial type;
- Change in aerial height;
- Resite of the existing aerial.

18.39 Where an alternative transmitter located in a different direction to the proposed site is used to receive TV signals. This will usually entail a new aerial installation directed towards the alternative transmitter.

- Reception of TV and Radio through DTTV (Freeview) - Digital reception is less likely to be affected by reflections and can be an alternative to analogue reception when ghosting interference is being received. To receive these services an aerial upgrade and set top box are usually required.
- Receiving television from one of the satellite services e.g. Sky - This would require the installation of a satellite dish and set top box and possibly incur monthly subscriptions.
- Connection to the local cable network - This would require liaison with the local cable operator.

Conclusion and Residual Impacts

18.40 It is not possible for the reasons set out at the beginning of this Chapter to be conclusive about the effects on TV and Radio reception until such time as the buildings are constructed.

18.41 Notwithstanding this, the assessment carried out as part of this EIA has concluded that given the existing conditions in the vicinity of the subject site, any effects will be localised and can be mitigated. With the suggested mitigation measures there are unlikely to be any significant residual impacts.

References

- EMC Specifications MPT 1510:1989.
- Radiation limits and Measurements standard.
- BS5640.
- Aerials for the reception of sound and television broadcasting in the frequency range 30MHz to 1GHz.
- BS5460 Part 2 1978.

- Methods of measurement of electrical performance parameters.
- PPG 8 - Telecommunications (August 2001).

Summary of Impacts

18.42 The following Figure 18.1 provides a summary of impacts.

Figure 18.1 Summary of Impacts - TV and Radio Reception

Activity	Potential Impact	Nature of Impact	Duration of Impact	Significance	Mitigation	Residual Impact
Use of high level cranes during construction.	Interference with TV reception, to a greater extent that the proposed development.	Negative	Short Term	Local	Change of aerial type, or change in aerial height, or resite of the existing aerial.	None
Operation of development.	Impaired analogue TV reception.	Negative	Long term	Local	Change of aerial type, or change in aerial height, or resite of the existing aerial. Alternatively install digital TV services or satellite service	None

19. Summary of Mitigation Measures and Residual Impacts

Introduction

19.1 This concluding Chapter summarises and provides an overview of the predicted environmental impacts, required mitigation measures and residual impacts associated with the proposals at Islington Wharf. It draws upon the conclusions of **Chapters 7 to 18** on a subject-by-subject basis.

Phasing and Construction Methodology

19.2 This Chapter has considered the significant environmental impacts and mitigation measures associated with the phasing and construction of the proposal. Summarised below are the key impacts and mitigation measures identified.

Figure 19.1: Summary of Mitigation - Construction and Phasing

Description of Potential Impact	Significance	Mitigation	Residual Impact
Visual impact of Site Works	Local	Erection of hoarding painted in appropriate hues.	Negligible
Movement of Construction Traffic	Local	Project Transport Strategy agreed with Manchester City Council put into place.	Negligible
Increased Construction materials dispersed onto the roads	Local	Project Transport Strategy agreed with Manchester City Council put into place.	Negligible
Construction fuels and oils spreading into canal and/or water courses	Local / (Regional)	Ensure that Contractors are using the most appropriate method of working and that a suitable Environmental response team is in place.	Negligible
Material Transfer	Local	Dust Management Plan agreed with Manchester City Council put into place.	Negligible
Noise impact during all construction works	Local	Use of Site Hoardings, Cabins and the buildings under construction to minimise noise transfer beyond site boundaries.	Negligible
Vibration impact during all construction works	Local	Best Practicable Means to be employed and control of working hours.	Negligible

Description of Potential Impact	Significance	Mitigation	Residual Impact
Contaminants associated with Ground Conditions	Local	Ensure Contractor provides Ground Workers with appropriate PPE and that correct method of works and monitoring is in place.	Negligible
Loss of Archaeological Finds	National	Archaeological Watching Brief put in place by a suitable Contractor.	Negligible
Loss of TV reception	Local	Change of aerial type, or change in aerial height, or resite of the existing aerial. Alternatively install digital TV services or satellite service.	Minor Local
Disruption to Canal and towpath	Local	Contractors to liaise and comply with British Waterways and their Code of Practice.	Negligible
Disruption to Flora & Fauna	Regional	Agreement for the sequence of works to drain canal with British Waterways and English Nature.	See Ecology section below.

Archaeological and Historic Resource

19.3 The impact of the development proposals upon the archaeology has been considered.

19.4 The site is considered to have low potential for remains of all archaeological periods prior to the 19th century. There is the potential for the foundations of the former housing fronting Bradfield Street, Back Mill Street and Sweden Street to survive. The primary area of archaeological potential is the site of the 18th/19th century Moores Cotton Mill and its boiler house. There is also the potential for the foundations of the former canal wharf buildings on the western side of the canal wharf and a former over-warehouse on the western side of the canal wharf immediately to the north of the tow-path bridge. These remains are considered to be of local importance.

19.5 Should such deposits be present, construction operations may have a direct physical impact of partially or totally removing them either during cut and fill operations or the insertion of the piled foundations. Therefore the impact of the proposed development on archaeological remains if still present on site is considered to be moderate.

19.6 Once the evaluation and any subsequent mitigation measures have been fully implemented, the proposed development will have no residual archaeological impacts.

19.7 Set out below is a summary of the mitigation measures.

Figure 19.2 Summary of Mitigation - Archaeological and Historic Resource

Potential archaeological deposits	Importance of potential archaeological deposits	Quantitative Impact	Significance of Impact	Mitigation	Residual Impact
Moores Mill	Local	Extensive	Moderate	Evaluation/ Excavation.	None
Canal/coal wharf buildings	Local	Extensive	Moderate	Evaluation/ Excavation.	None
Over Warehouse	Local	Slight	Minor	Evaluation/ Excavation.	None

Historic Environment

19.8 The impacts of the development proposals upon the listed structures on the site has been considered.

19.9 No adverse impacts have been identified as part of the proposals. The proposal has been sensitively designed in such a way as to incorporate any potential mitigation into the current works to the listed structures.

19.10 The benefits that flow from this include permeability and access to the wharf area from the public tow path, salvaging of reusable materials, and enhanced landscape setting to the bridge, lock keeper's cottage and the basin.

19.11 Mitigation in respect of any impact upon settings is formulated upon the overall benefits of revitalisation and regeneration of the area.

19.12 The benefit that arises from the works far outweigh any possible adverse effect or impact. There is no identified major intervention or impact upon the listed structures or their setting or any significant residual impact.

Figure 19.3 Summary of Mitigation - Historic Environment

Potential Impact	Significance	Mitigation	Residual Impact
Removal of made-up ground, removal of modern interventions, possible alteration/adjustment footing bed stones to retaining structure.	Negligible, local	Allows universal physical access to the towpath.	Negligible
Visual, affects setting of the listed structure.		Visual improvement over existing condition.	None
Removal of intrusive, negative structure, removal of unsound embankment.	Major, local	Allows restoration of part of bridge structure, exposes the arch and rear face.	None

Neutral/Negative	Medium, local	New structure adjacent to the bridge will not be structurally. enjoined, but be separated with a soft joint. Historic fabric will be preserved and repaired. Salvaged elements will be re-used. Public permeability and access is created.	None

Visual Assessment

19.13 As described in Chapter 10, the proposed development will provide a landmark development and a gateway to the East Manchester area. In due course it will be set within a completely transformed urban panorama of large scale, mixed use buildings, between 6 and 12 storeys in height and of very varied character.

19.14 In the near future the canal and towpath will become a well-used and important recreational corridor and the public spaces associated with the Islington Wharf development will provide a major node and point of access within the wider network of pedestrian routes linking the city centre to the Eastern suburbs. Block B will have become a new focal point on the Manchester skyline and another identifiable symbol of the city's renaissance.

19.15 The residual landscape impact associated with the proposal will be Major/Beneficial.

19.16 The residual visual impact for all receptors described above will be beneficial, although the degree will vary from Minor to Major.

Figure 19.4 Summary of Mitigation - Visual Assessment

Character Zone	Key Receptors	OPTION A		OPTION B		Mitigation	Residual
	Sensitivity (H,M,L)	**Construction**	**Operation**	**Construction**	**Operation**		
City Centre	Residents (H)	Minor	Minor	Minor	Minor	The absence of adverse visual impacts is based on the assumption of high quality architectural proposals throughout the three phases of the scheme. Mitigation measures for adverse visual impacts during the Construction Stage include: • Well designed hoardings • Protection of towpath • Location of compound away from main thoroughfares • Temporary landscape treatment between	Residual impacts will be conditioned by the degree of further development currently envisaged for all the surrounding areas. The scale and character of these developments as currently proposed will reduce the impact of the Islington Wharf development over time. The principle residual impact will be that of Block B, 'the Shard', which will remain a landmark on the Manchester skyline and a visual point of reference at this gateway to the East from the town centre.
	Office workers (M)	Minor	Minor	Minor	Minor		
Northern Quarter	Residents (H)	Minor	Minor	Minor	Minor		
	Office workers (M)	Minor	Minor	Minor	Minor		
Miles Platting	Residents (H)	Moderate/ Adverse	Moderate/ Beneficial	Moderate/ Adverse	Moderate/ Beneficial		
Piccadilly	Residents in Piccadilly Village(H)	**Major/ Adverse**	**Major/ Beneficial**	**Major/ Adverse**	**Major/ Beneficial**		
	Users of Ashton Canal Corridor (H)	Moderate/ Adverse	Moderate/ Beneficial	Moderate/ Adverse	Moderate/ Beneficial		

	Other receptors (L)	Minor	Minor	Minor	Minor	phases • Separation of construction traffic.	
Great Ancoats St.	Employees (M)	Minor	**Major/ Beneficial**	Minor	**Major/ Beneficial**		
	Other receptors (L)	Moderate	Minor	Moderate	Minor		
Ancoats	Residents of Redhill St (H)	Moderate/ Adverse	Minor	Moderate/ Adverse	Minor		
	Users of Rochdale Canal Corridor (H)	Moderate/ Adverse	Minor	Moderate/ Adverse	Moderate		
New Islington & Eastlands	Office Workers in Pollard St Mills (M)	Moderate/ Adverse	Moderate/ Beneficial	Moderate/ Adverse	Moderate/ Beneficial		
	Users of Ashton Canal Corridor (H)	**Major/ Adverse**	**Major/ Beneficial**	**Major/ Adverse**	**Major/ Beneficial**		
Universities	Staff and students in Moffatt Building (M)	Minor	Minor	Minor	Minor		

Socio Economic Assessment

19.17 The impacts of the development proposals upon the socio economic composition of the area has been considered.

19.18 Situated on the fringes of central Manchester and at the south west edge of New East Manchester, the development will reinforce the emergence of this quarter as a residential location, built around the canals that lead outwards into the deprived areas to the east. In itself it will contribute directly and substantially towards the challenging housing and population targets set for New East Manchester.

19.19 The development will also assist the credibility and viability of housing and related neighbourhood development proposals in the adjacent New Islington Community, (for which Old Mill Street is planned to provide the main local shopping), and Ancoats Urban Village. It will also support other developments taking place in the vicinity, such as the new leisure proposals at Sportcity and further development of the knowledge centres based in the Higher Education Precinct, to the south and west.

19.20 Crime rates are expected to drop once the scheme is completed and occupied, and the shopping units brought into use.

19.21 If approved, the project will create between around 140 and 260 jobs, (dependent on which option is developed), in a part of Manchester which is close to some of the most economically deprived areas of Britain, and in occupations which will be accessible to those without higher level or intermediate level qualifications. There will also be substantial temporary construction work, averaging around 200 jobs over the construction period.

Figure 19.5 Summary of Mitigation - Socio Economic Assessment - Option I

Impacts					
Economic	**Labour market**		**Regeneration Impacts**		
Criteria and Measures					
Aggregate growth	**Skills Balance**		**Unemployment change**	**Population Increase**	**Housing Increase**
% of target of 10,000 new jobs	**% take of jobs in major occ. groups**	**% of jobs in lower skilled groups**	**Number out of work**	**% of target of 30,000**	**% of target of 12,500**
Impact areas					
New East Manchester	**New East Manchester**	**New East Manchester**	**Nearest 5 Wards**	**New East Manchester**	**New East Manchester**
Effects					
Moderate Beneficial	**Negligible**	**Substantial Beneficial**	**Substantial Beneficial**	**Substantial Beneficial**	**Substantial Beneficial**

Figure 19.6 Summary of Mitigation - Socio Economic Assessment - Option II

Impacts					
Economic	**Labour market**		**Regeneration Impacts**		
Criteria and Measures					
Aggregate growth	**Skills Balance**		**Unemployment change**	**Population Increase**	**Housing Increase**
% of target of 10,000 new jobs	**% take of jobs in major occ. groups**	**% of jobs in lower skilled groups**	**Number out of work**	**% of target of 30,000**	**% of target of 12,500**
Impact areas					
New East Manchester	**Manchester**	**New East Manchester**	**Nearest 5 Wards**	**New East Manchester**	**New East Manchester**
Effects					
Substantial Beneficial	**Negligible**	**Substantial Beneficial**	**Substantial Beneficial**	**Substantial Beneficial**	**Substantial Beneficial**

Noise and Vibration

19.22 The noise and vibration impact of the development proposals upon the key receptors on the site, the effects of noise from existing sources on the proposed development and intra development noise impacts, have been considered.

19.23 Set out below is a summary of the mitigation measures and the residual impacts.

19.24 Overall noise impact from and within the site can be controlled to acceptable levels through good design and mitigation. Consequently, no significant residual effects of noise or vibration are anticipated.

Figure 19.7 Summary of Mitigation - Noise and Vibration

Description of Potential Impact	Significance	Mitigation	Residual Impact
Noise from demolition and construction on local noise sensitive receptors.	Moderate Local	• Use of Best Practicable Means. • Public liaison. • Enforcement of noise control measures on contractor. • Use of silenced, well maintained plant and noise enclosures and barriers, where necessary. • Limiting hours of site working.	Minor Local

Vibration from demolition and construction on local residents and listed structures.	Minor Local	Use of Best Practicable Means.	Negligible
Increase traffic noise on local residents and other noise sensitive receptors.	Negligible	Not required.	Negligible
Traffic vibration on local residents and buildings.	Negligible	Not required.	Negligible
Patron and commercial noise from the retail units, hotel and A3 use.	Moderate Local	Enforcement of noise control measures through Condition to the Planning Approval or licensing control.	Negligible
Vehicle noise from car parking and deliveries.	Negligible	Not required.	Negligible
Noise emissions from fixed plant on local residents and other noise sensitive receptors.	Minor Local	Compliance with criteria by incorporating noise control measures into design of fixed plant.	Negligible

Ground Conditions

19.25 The impact of the development proposals upon the key receptors has been considered in relation to the ground conditions. The site will be remediated to ensure the site is 'suitable for use' in accordance with Part IIA of the Environmental Protection Act, such that contamination remaining on site:

(i) Does not present a significant risk of significant harm to identified receptors;

(ii) Does not cause significant pollution of controlled waters.

19.26 An outline remediation strategy is set out in Chapter 13. The detailed Remediation Strategy will be prepared and submitted to the Manchester City Council Environmental Health Officer for approval prior to the commencement of construction work on the site. This will be controlled through a planning condition.

Figure 19.8 Summary of Mitigation - Ground Conditions

Description of Potential Impact	Significance	Mitigation	Residual Impact
Inhalation and ingestion by humans of fugitive dust	Medium	Remediation Strategy (RS) and Construction Method Statement (CMS)	Low
Ingestion, dermal contact, and inhalation of Contaminated Vapour by humans	Medium	Remediation Strategy (RS)	Low

Description of Potential Impact	Significance	Mitigation	Residual Impact
Pollution of Surface Waters	Medium	Remediation Strategy (RS)	Low
Pollution of Aquifer	Medium	Remediation Strategy (RS)	Low
Spread of Invasive Plant (Japanese Knotweed)	Medium	Advance spraying and removal	Low
Accumulation of Ground Gas in building	High	Remediation Strategy (RS) and Gas measures as per CIRIA R149	Low

Flood Risk Assessment

19.27 The impact of the development proposals upon the key receptors has been considered in relation to flood risk.

19.28 The flood risk assessment has concluded the site is not at risk from fluvial, coastal, tidal, groundwater, overland flow or drainage systems based flooding.

19.29 The Ashton Canal poses a low flood risk to the development if Pounds 1-2 or 2-3 were to overtop. Increasing awareness of the emergency call out procedure to local residents and building users, localised ground profiling, and consideration of low level building openings will reduce this risk.

Figure 19.9 Summary of Mitigation – Flood Risk Assessment

Description of Potential Impact	Significance	Mitigation	Residual Impact
Damage to building fabric	Low	Advertise information and the British Waterways Emergency Call Out phone number to residents and in public areas Localised ground raising adjacent to Lock 2 and Lock Keepers cottage to direct overland flood water to downstream Pound (No.1-2). Design to avoid openings at ground level in Block E on SE sides that could lead to underground car parks being flooded	Reduced
Damage to building contents	Low		Reduced
Long term economic loss of asset	Low		Reduced
Loss of life	Low		Reduced

Transport and Highways

19.30 The impact of the development proposals upon the key receptors has been considered in relation to transport and highways.

19.31 Generally, there are no mitigation measures required as a result of the proposed development. The public realm is greatly enhanced, connections to public transport are enhanced and the impact of additional vehicles on the road network are found to be insignificant. As well as the public realm improvements, provision is being made within the scheme to encourage walking and the use of cycles.

19.32 The residual effects of the scheme are generally positive in that the existing site is a derelict and poorly used part of the city. There is some increase in vehicle numbers on Great Ancoats Street as a result of the development but the small percentage change at peak times is not significant. This is because the phasing of the traffic signals at the junction of Old Mill Street and Great Ancoats Street regulates the number of vehicles moving on to Great Ancoats Street to a fixed maximum number. Therefore increasing the number of vehicles trying to access Great Ancoats Street can only result in longer queuing on Old Mill Street and this does not have an impact on the primary road network. It will also only occur during the limited morning and evening peak periods of the day.

19.33 The additional vehicle numbers also have the positive impact of generating activity on the edge of a new residential area which can enhance the natural surveillance of the streets.

Figure 19.10 Summary of Mitigation – Transport and Highways

Description of Potential Impact	Significance	Mitigation	Residual Impact
Construction traffic near town centre	Moderate local	Restriction on working hours to comply with MCC UDP. Routing of construction traffic to and from site to avoid residential areas. This will be regulated by condition and/or legal agreements.	None
Narrowing of footways	Minor local	Some disruption to pedestrian movement through and around the site unavoidable during construction. Conditions will ensure that minimum footway provision is maintained. Minimum standards would be agreed with MCC.	None
Work on adjacent highways	Minor local	Conditions will ensure that cyclists are adequately catered for in all traffic management proposals.	None
Narrowing of road	Minor local	Restriction on working hours.	None

Description of Potential Impact	Significance	Mitigation	Residual Impact
Movement through and within site	Major local	Increase in quality of pedestrian routes.	Positive
Accessibility and safety	Moderate local	• Increase in quality of cycle routes. • Tactile paving installed. • Parking bays provided.	Positive
Provision of new facilities	Moderate local	Employee and public cycle parking spaces will be provided.	Positive

Ecology

19.34 The impact of the development proposals upon the key receptors have been considered in relation to Ecology.

19.35 In summary, the following mitigation measures will be included:

- Lighting provision to minimise impact upon bat flight paths along canal and canal arm.
- All scrub vegetation will be cleared as soon as possible and before March to avoid delays caused by birds breeding on the site.
- Dewatering of canal arm requires a Defra licence because of floating water plantain. This includes a detailed Method Statement of how works will be carried out to avoid detriment to or loss of plants in canal arm and may include temporary relocation during Phase 2 works. Mitigation for grasswrack pondweed would be incorporated in this.
- Strategy outlined in ES Ecology Section (Appendix 16.9) will be followed.

19.36 In addition, the following measures will be offered as enhancements to the development for ecology:

- Black redstart - include suitable features for nesting and feeding.
- Bats - install artificial roosts along canal frontage of buildings.

19.37 If the safeguards and mitigation described above is followed in full, the resulting impacts from the development, in its 3 phases, are minimised.

Figure 19.11. Summary of Mitigation - Ecology, Phase 1

Ecological Receptor	Nature of Impact	Significance	Safeguard and Mitigation measures	Residual impacts
Bats	Direct: Potential roost loss in existing site buildings	Neutral	Install bat roost provision in new buildings.	Slight Positive
	Indirect: increased night-time lighting	Large adverse	(i) Avoid 'feature' lighting of canal (ii) Use low-level bollard lighting for footpaths.	Neutral
Black redstart	Direct: potential loss of buildings and terrestrial habitats	Neutral	Incorporate suitable nest and feeding habitats in new buildings.	Slight Positive
Floating water plantain	Direct: damage or loss of plants during dewatering	Large adverse	(i) Follow Defra licensing procedure incl. Method Statement (ii) survey before works so plants can be safeguarded (iii) monitor post dewatering.	Neutral to slight positive, as plant can benefit from slight disturbance
Grasswrack pondweed	Direct: damage or loss of colony during dewatering	Large adverse	(i) method for works to contain safeguard for colony (ii) monitor post dewatering.	Slight adverse to neutral
Breeding birds	Direct: disturbance during site clearance	Slight adverse	Avoid bird breeding season March-August inclusive.	Neutral
	Indirect: disturbance from site construction traffic	Slight adverse	Clear habitats before bird breeding starts, to discourage nesting.	None
	Direct: loss of habitat in scrub	Large adverse	Landscape planting will contain new habitats for invertebrates and birds.	Neutral

Figure 19.12. Summary of Mitigation - Ecology, Phase 2

Ecological Receptor	Nature of Impact	Significance	Safeguard and Mitigation measures	Residual impacts
Bats	Direct: Potential roost loss	Neutral	Install bat roost provision in new buildings.	Slight Positive

Ecological Receptor	Nature of Impact	Significance	Safeguard and Mitigation measures	Residual impacts
	Indirect: increased lighting of canal	Large adverse	(i) Avoid 'feature' lighting of canal (ii) Use low-level bollard lighting for footpaths.	Neutral
Black redstart	Direct: potential loss of buildings and terrestrial habitats	Neutral	Incorporate suitable nest and feeding habitats in new buildings.	Slight Positive
Floating water plantain	Direct: damage or loss of plants during dewatering	Large adverse	(i) Follow Defra licensing procedure inc. Method Statement (ii) survey before works so plants can be safeguarded (iii) monitor post dewatering.	Neutral to slight positive, as plant can benefit from slight disturbance
	Indirect: increased shading from new buildings	Large adverse	Adhere to Strategy, Appendix 16.9.	Neutral to Slight positive
	Indirect: shading from increased turbidity from boat traffic	Large adverse	Adhere to Strategy, Appendix 16.9.	Neutral to Slight positive
Grasswrack pondweed	Direct: damage or loss of colony during dewatering	Large adverse	(i) method for works to contain safeguards for colony (ii) monitor post dewatering.	Slight adverse to neutral
	Indirect: increased shading from new buildings	Large adverse	Adhere to Strategy, Appendix 16.9.	Neutral to Slight positive
	Indirect: shading from increased turbidity from boat traffic	Large adverse	Adhere to Action Plan, Appendix 16.9.	Neutral to Slight positive
Breeding birds	Direct: disturbance during site clearance	Slight adverse	Avoid bird breeding season March-August inclusive.	Neutral
	Indirect: disturbance from site construction traffic	Slight adverse	Clear habitats before bird breeding starts, to discourage nesting.	None

Ecological Receptor	Nature of Impact	Significance	Safeguard and Mitigation measures	Residual impacts
	Direct: loss of habitat in scrub	Slight adverse	Landscape planting will contain new habitats for invertebrates and birds.	Neutral

Figure 19.13. Summary of Mitigation - Ecology, Phase 3

Ecological Receptor	Nature of Impact	Significance	Safeguard and Mitigation measures	Residual impacts
Bats	Direct: Potential roost loss	Neutral	Install bat roost provision in new buildings.	Slight Positive
	Indirect: increased lighting of canal	Large adverse	(i) Avoid 'feature' lighting of canal (ii) Use low-level bollard lighting for footpaths.	Neutral
Black redstart	Direct: potential loss of buildings and terrestrial habitats	Neutral	Incorporate suitable nest and feeding habitats in new buildings.	Slight Positive
Floating water plantain	Indirect: shading from increased turbidity from boat traffic	Large adverse	Adhere to Action Plan, Appendix 16.9.	Neutral to Slight positive
Grasswrack pondweed	Indirect: shading from increased turbidity from boat traffic	Large adverse	Adhere to Action Plan, Appendix 16.9.	Neutral to Slight positive
Breeding birds	Direct: disturbance during site clearance	Slight adverse	Avoid bird breeding season March-August inclusive.	Neutral
	Indirect: disturbance from site construction traffic	Slight adverse	Clear habitats before bird breeding starts, to discourage nesting.	None
	Direct: loss of habitat in scrub	Slight adverse	Landscape planting will contain new habitats for invertebrates and birds.	Neutral

Air Quality

19.38 The impacts of the development proposals upon the key receptors have been considered in relation to air quality.

19.39 The construction effects of the proposed development on local air quality would be principally dust nuisance events during the limited duration of construction activities. It is proposed that these be controlled through mitigation measures within an approved CoCP ensuring any adverse effects of the construction on local air quality are minimised or avoided.

19.40 Air quality impacts associated with the scheme in operation would primarily be from traffic. The operational effects on local air quality associated with the proposed redevelopment of the subject site (under either Option I or II) are not significant. No mitigation measures in relation to the operation of the development are proposed.

19.41 No long-term residual air quality effects are expected as a consequence of the construction or operation of the new development.

19.42 Slight adverse effects may be experienced as a result of construction of the scheme, although these would be temporary. No long-term residual effects are expected as a result of construction works.

19.43 No residual effects to local air quality are anticipated as a consequence of the scheme traffic once operational i.e. the impacts on air quality as a direct consequence of traffic associated with the scheme are considered insignificant. The scheme would not materially influence that status of the City's Air Quality Management Area.

19.44 The following table provides a summary of impacts for air quality associated with the development and sets out the residual impact.

Figure 19.14 Summary of Mitigation - Air Quality

Description of Potential Impact	Significance	Mitigation	Residual Impact
Nuisance associated with fugitive dust emission on existing local residents and other sensitive receptors	Moderate/ Local	• Adoption of a Code of Construction Practice (CoCP). • Damping down of site during dry weather. • Sheeting of vehicles. • Sensitive and considered location of dust-generating activities.	Minor / Local

Exceedence of air quality objectives associated with development-induced traffic Potential effects of air quality exceedances on local residents, pedestrians and other sensitive receptors	Negligible/ Local	Not required.	Negligible

TV and Radio Reception

19.45 The impact of the development proposals upon the key receptors has been considered in relation to TV and Radio reception.

19.46 Large structures have the capability of causing interference to medium and long wave radio signals, particularly where metal structures are used in the construction but this interference is usually only within the immediate area of the building. HF (FM) reception is less prone to such interference and again in this case domestic radio reception will not be affected.

19.47 It is not possible for the reasons set out in Chapter 18 to be conclusive about the effects on TV and Radio reception until such time as the buildings are constructed.

19.48 Notwithstanding this, the assessment carried out as part of this EIA has concluded that given the existing conditions in the vicinity of the subject site, any effects will be localised and can be mitigated. With the suggested mitigation measures there are unlikely to be any significant residual impacts.

Figure 19.15 Summary of Mitigation - TV and Radio Reception

Description of Potential Impact	Significance	Mitigation	Residual Impact
Use of High Level cranes may cause interference with analogue TV reception, to a greater extent that the proposed development.	Local	Change of aerial type, or change in aerial height, or resite of the existing aerial.	None
Impaired analogue TV reception.	Local	Change of aerial type, or change in aerial height, or resite of the existing aerial. Alternatively install digital TV services or satellite service.	None