ARUP

Government Property Agency

Manchester Digital Campus

Crime Impact Statement

Reference: MSIP-ARP-ZZ-XX-RP-Y-000005

P04 | 22 October 2024

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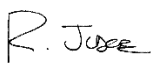
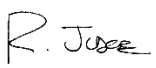
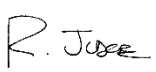
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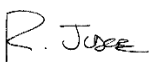
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Document Verification

Project title	Manchester Digital Campus
Document title	Crime Impact Statement
Job number	294050-00
Document ref	MSIP-ARP-ZZ-XX-RP-Y-000005
File reference	MSIP-ARP-ZZ-XX-RP-Y-000005-P04

Revision	Date				
P01 DRAFT	31/07/2024	**Filename**	MSIP-ARP-ZZ-XX-RP-Y-000005-P01-DRAFT		
		Description	First Draft. S3 – Suitable for Review & Comment		
			Prepared by	**Checked by**	**Approved by**
		Name	Niamh Barker	Phil Williams	Ryan Judge
		Signature			
P02	13/09/2024	**Filename**	MSIP-ARP-ZZ-XX-RP-Y-000005-P02		
		Description	Final Issue. S4 – Suitable for Stage Approval		
			Prepared by	**Checked by**	**Approved by**
		Name	Niamh Barker	Richard Bond	Ryan Judge
		Signature			
P03	27/09/2024	**Filename**	MSIP-ARP-ZZ-XX-RP-Y-000005-P03		
		Description	Final Issue – updated based on GPA comment. S4 – Suitable for Stage Approval		
			Prepared by	**Checked by**	**Approved by**
		Name	Niamh Barker	Phil Williams	Ryan Judge
		Signature			

P04	22/10/2024	**Filename**	MSIP-ARP-ZZ-XX-RP-Y-000005-P04		
		Description	Final Issue. S4 – Suitable for Stage Approval		
			Prepared by	**Checked by**	**Approved by**
		Name	Niamh Barker	Phil Williams	Ryan Judge
		Signature			

Issue Document Verification with Document ✓

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Executive Summary

Arup has been instructed to develop a Crime Impact Statement (CIS) to aid the planning application for the Government Property Agency (GPA) new civil service campus, referred to as the Manchester Digital Campus (MDC) in Ancoats, Manchester, UK.

The application is for full planning permission for MDC, alongside forming the new ground levels for Manchester City Council's (MCC) separate planning application for a proposed new park. The site is based on the Former Central Retail Park (FCRP).

Throughout the design development of MDC, the key principles of Crime Prevention Through Environmental Design (CPTED) have been carefully considered in order to reduce the opportunities for crime and the fear of crime. It should be noted that dedicated Threat, Vulnerability and Risk Assessments (TVRAs) which capture crime and nuisance threats have been produced for the relevant aspects of the site and have been used to inform the security mitigations that are to be put in place.

It should be noted that during the development of this CIS, Arup hosted a workshop with Patrick Babb, Greater Manchester Police (GMP) Design for Security Consultant, on 06/09/2024. During this workshop GMP reviewed the document and provided comments where relevant. Arup have subsequently updated it in line with those comments.

Following issue of this CIS, relevant Design for Security Consultants within GMP should review the content and determine whether they would be happy to support the development on this basis. During this time GMP may recommend to the local planning authority that a planning condition is added that reflects the security mitigations listed within Sections 4, 5 and 6 of this CIS.

This CIS is structured as follows:

- Section 1 presents an overview of the existing site, including the site location and a visual audit of the boundary, plus any security relevant observations.
- Section 2 contains relevant crime statistics and analysis for the area.
- Section 3 contains a layout appraisal, including the proposed site arrangement, an overview of the different phases of the site, alongside the anticipated positive impacts the development should have.
- Section 4 presents the security measures which are incorporated into the design of the Civil Service Buildings including both physical and electronic security.
- Section 5 presents the security measures which are incorporated into the design of the commercial units including both physical and electronic security.
- Section 6 presents the security measures which are incorporated into the design of the public realm spaces including both physical and electronic security.
- Section 7 contains guidance on management and maintenance of the site.
- Section 8 presents guidance on securing the site during construction.
- Section 9 contains relevant references.
- Section 10 contains a concluding statement.

Abbreviations

ACS	Access Control System
AOD	Above Ordnance Datum
ASB	Anti-Social Behaviour
CIS	Crime Impact Statement
CPTED	Crime Prevention Through Environmental Design
EACS	Electronic Access Control System
FCRP	Former Central Retail Park
GEA	Gross External Area
GIA	Gross Internal Area
GMP	Greater Manchester Police
GPA	Government Property Agency,
HVM	Hostile Vehicle Mitigation
LPS	Loss Prevention Standard
MCC	Manchester City Council
MDC	Manchester Digital Campus
MO	Modus Operandi
NIA	Net Internal Area
PIDS	Perimeter Intruder Detection System
SBD	Secured by Design
SRF	Strategic Regeneration Framework
TBC	To Be Confirmed
VSS	Video Surveillance System

1. Existing Site & Surroundings

1.1 Site Overview

The site is approximately 2.98 ha. (Site Location boundary) and comprises of vacant brownfield land, comprised mostly of hardstanding. There are existing trees / shrubs on the Site, mostly congregated on the southern, western, and northern boundaries. There is a significant level change across the Site, descending from the north to the southern extent at Great Ancoats Street. The Site has a main vehicular access point off Great Ancoats Street to the south.

The Site is located within New Islington and forms the western portion of the Former Central Retail Park, the redevelopment of which is a long-standing strategic priority for MCC. MCC endorsed a Strategic Regeneration Framework (SRF) for the Former Central Retail Park in 2023, which sets out the vision to create a high-quality, sustainable office district with an attractive public realm at its centre, including a new green space.

The Site is bound by the Co-op Academy primary school and associated playground, Cotton Field Park and New Islington Medical Practice to the north, and the Rochdale Canal and associated towpath to the west, beyond which lie a number of commercial and residential buildings (including listed mill buildings) along Redhill Street. Although the Site is not located within the Ancoats Conservation Area, the boundary of the Conservation Area runs adjacent to the Site along the banks of the Rochdale Canal.

Great Ancoats Street, the inner-city ring road, runs along the southern boundary of the Site beyond which lies the Urban Exchange Retail Park, residential apartments in the Brownsfield Grade II* Listed Mill, and the serviced apartments on Laystall Street to the south.

The remainder of the Former Central Retail Park lies to the immediate east of the Site, separating it from Old Mill Street. The New Islington Medical Practice occupies a plot outside of the northeastern extent of the Former Central Retail Park adjacent to New Islington Marina and Cotton Field Park. A number of residential apartments line Old Mill Street and rise up to 16 storeys in height, and beyond this to the east lie further residential uses, the Ashton Canal and the New Islington Metrolink stop.

The wider area of New Islington, Ancoats and Piccadilly has witnessed significant investment and regeneration over the last circa 20 years and now is characterised as a residential-led neighbourhood with a wide range of supporting commercial and amenity offerings.

1.2 Site Location

The site is located in the Ancoats area of Manchester, England, as shown in Figure 1. The site has the following adjacencies:

- To the southwest, the site is bordered by Great Ancoats Street, which forms part of the Manchester Inner Ring Road. Great Ancoats Street is a very wide route, busy with both vehicle traffic and pedestrian footfall – this provides good levels of natural surveillance over the site from this direction.
- To the northwest, the site is bordered by the Rochdale Canal. Beyond this is Redhill Street which is a public highway.
- To the northeast, the site is bordered by an existing park (Cotton Field Park), and Hugh Oldham Way with the canal system present beyond these. Hugh Oldham Way is predominantly a private road used by the nearby school (Co-op Academy New Islington).
- To the southeast, the site is bordered by Old Mill Street, which is a public highway.

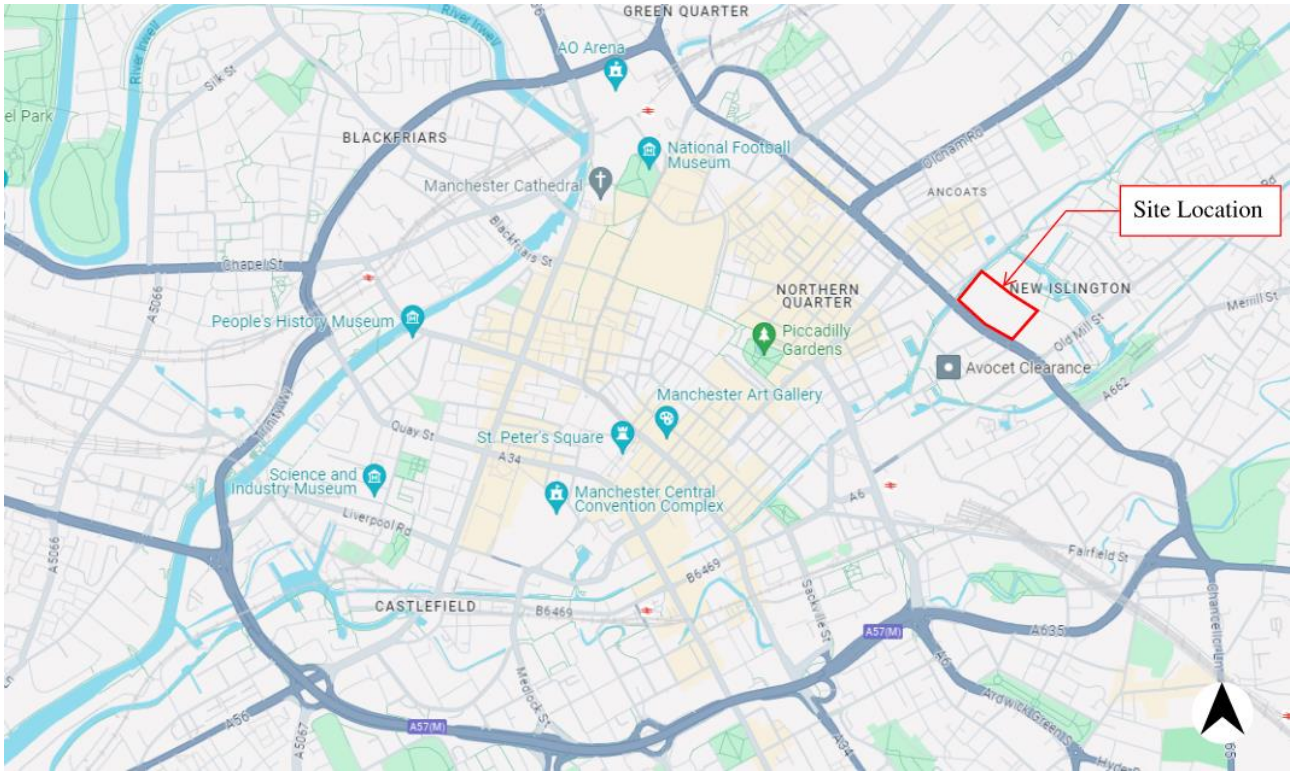


Figure 1: Approximate site location within Manchester. Map data ©2024 Google.

1.3 Current Visual Audit

Figure 2 shows an aerial view of the site location, along with eight site photos of key areas around the site perimeter. These are summarised below:

1. Image 1. West corner of the site, adjacent to Great Ancoats Street. The image shows a small, sloped masonry boundary wall approximately 1m high with a row of planting / hedging directly behind. Looking further into the site boundary, this appears relatively clear of litter, however there is significant graffiti present on an existing wall (assumed to have been part of the old Retail Park buildings).

2. Image 2. South-West edge of the site, adjacent to Great Ancoats Street. This image captures the existing site entrance, with traffic lights still in operation here. The site boundary is heavily overgrown with bushes and trees. Again, there is graffiti present both on the temporary barriers blocking the entrance, and further into the site along the existing wall as per Image 1.

3. Image 3. South-West edge of the site, adjacent to Great Ancoats Street. Similar to Images 1 and 2, the site boundary is heavily overgrown with bushes and there is graffiti present further into the site along the existing wall as per Image 1. There also appears to be a tent present in the site, as highlighted in Image 3, which could be an indicator that the site has attracted members of the homelessness community since being vacated. However, it is understood the tent is due to the presence of the skateboarding community who have inhabited the site since it was closed.

4. Image 4. South-East edge of the overall site, adjacent to Old Mill Street. Similar to Image 1, the image shows a small, sloped masonry boundary wall approximately 1m high with a row of trees / hedging directly behind.

5. Image 5. North-East edge of the site along Hugh Oldham Way (the school access road) looking into the site. The existing boundary in this location consists of timber posts approximately 1.2m high in front of an approximately 3.2m high mesh fence. Beyond this fence into the site there appears to be a drop of several metres forming a retaining wall with self-seeded trees growing over the fencing.

6. Image 6. North corner of the site adjacent to the Rochdale Canal looking down along the North-West boundary. The existing boundary between the Rochdale Canal and the site appears to be a masonry wall approximately 1m high with a steel bar fencing system on top, making the whole boundary approximately

2.4m high. The masonry appears to have areas of graffiti, including on the face of the footbridge in the background of the image.

7. Image 7. North-West edge of the site adjacent to the Rochdale Canal. Image taken at the base of the footbridge. Similar to Image 6, the existing boundary between the Rochdale Canal and the site appears to be a masonry wall approximately 1m high with a steel bar fencing system on top, making the whole boundary approximately 2.4m high. In this location a temporary steel fence is in place where an old access point to the Retail Park used to be located. Again, graffiti is witnessed in this location, and also looking into the site, graffiti is present on an existing wall.
8. Image 8. North-West edge of the site on Redhill Street. This image shows the existing footbridge over the Rochdale Canal from Redhill Street to the site boundary. The footbridge falls outside the development, however, is understood to be retained, and includes noticeable amounts of graffiti.

In addition to the above it should be noted that GMP highlighted the concern that The New Islington Medical Practice, located to the east of the site, currently attracts the drug use community attending the health clinic.



Figure 2: Existing Site Visual Audit. (Individual image references, including date of capture, are provided in the bottom corner of each image)

2. Crime Statistics & Analysis

2.1 Crime Data

Crime data pre-2019 for the Ancoats area has been extracted from UKCrimeStats [1]. Unfortunately, recorded crime data from 2019 onwards is not currently available from GMP due to ongoing IT issues. However:

- Pre-2019 crime data is available and has been used as a baseline.
- Post-2019 data from other forces covering comparable urban areas, shows consistent trends, namely:
  - The Covid-19 pandemic and restrictions imposed skewed data during 2020-2022.
  - More recent post-pandemic data shows a return to pre-pandemic crime types and levels.
- Therefore, it is reasonably expected the current crime profile in the area is broadly similar to 2019 levels and hence this data is appropriate to use for this analysis.
- It is however acknowledged that there may be short term and/or localised differences in data which it has not been possible to capture in this approach.
- During a meeting with GMP held on 06/09/2024, Patrick Babb, GMP Design for Security Consultant, noted that although the crime data presented in this section is out of date, the general trends and top crimes are still applicable to the crime picture seen by GMP in current times.

Crime data extracted from UKCrimeStats [1] for the Ancoats area accounts for crimes reported within the blue area highlighted in Figure 3 between June 2018 and May 2019. The site location is also highlighted in Figure 3 in red, in the south corner of the crime area. The site area encompasses approximately 2.6% of the entire reported crime area.



Figure 3: Ancoats, Manchester Crime Data Reporting Area and Site Area. Imagery ©2024 Google, Imagery ©2024 Airbus, Maxar Technologies, Map data ©2024.

2.2 Crime Summary

Figure 4 displays the crime statistics breakdown per threat type, as categorised by GMP, between June 2018 and May 2019 for the Ancoats area as shown in Figure 3.

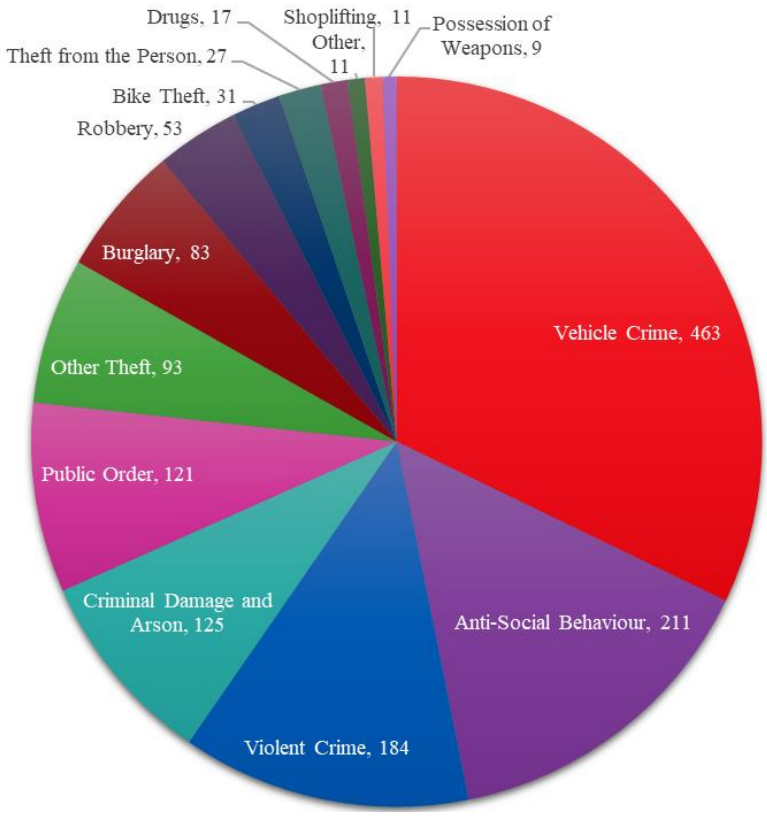


Figure 4: Ancoats, Manchester, Crime Breakdown - June 2018-May 2019. Data sourced from: [1]

In the local area, the general volume of crime is very high, particularly vehicle crime (including the theft of vehicles, vehicle damage and the theft of property from vehicles), Anti-Social Behaviour (ASB), violent crime and criminal damage (including arson). These types of crimes appearing as the most prevalent is not uncommon for a city centre location such as Ancoats due to their proximity to concentrations of people, retail and commercial properties which often leads to high rates of crime and nuisance in the area.

During a meeting with GMP held on 06/09/2024, Patrick Babb, GMP Design for Security Consultant, noted that burglary tends to be higher in this area of Ancoats than the rest of the city (for unknown reasons), and the quantity of bike thefts has increased significantly since that presented in Figure 4.

Figure 5 displays the above crime data over a month-by-month chart between June 2018 and May 2019 for the Ancoats area as shown in Figure 3. This shows a fairly typical trend of a slight decrease in the frequence of crimes over the winter months (December – January), with a relatively steady frequency of crimes throughout the rest of the year.

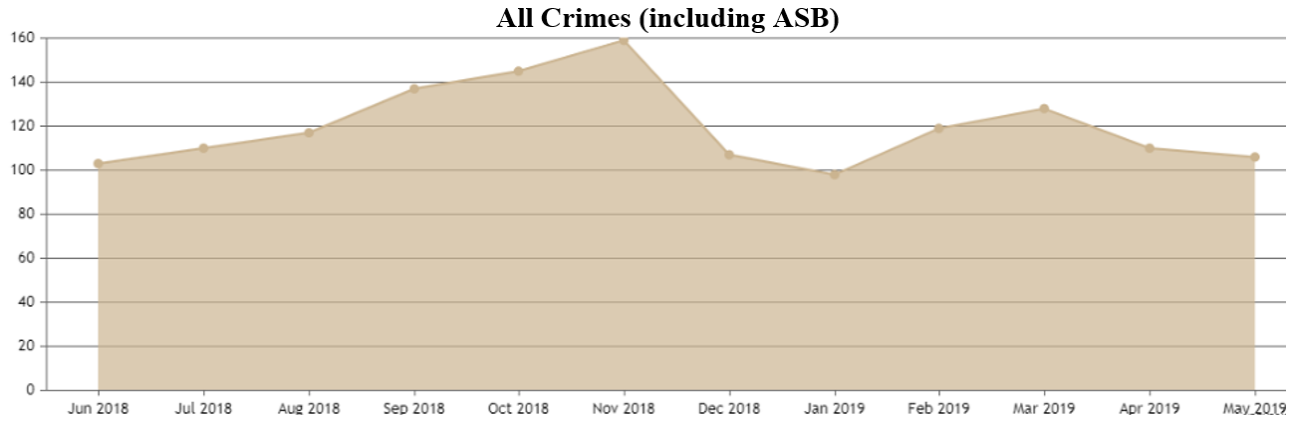


Figure 5: Ancoats Manchester, All Crimes - June 2018-May 2019. Image sourced from: [1]

2.2.1 Month Breakdown

Figure 6 to Figure 10 display month by month frequency charts of the top five crimes between June 2018 and May 2019 for the Ancoats area as shown in Figure 3.

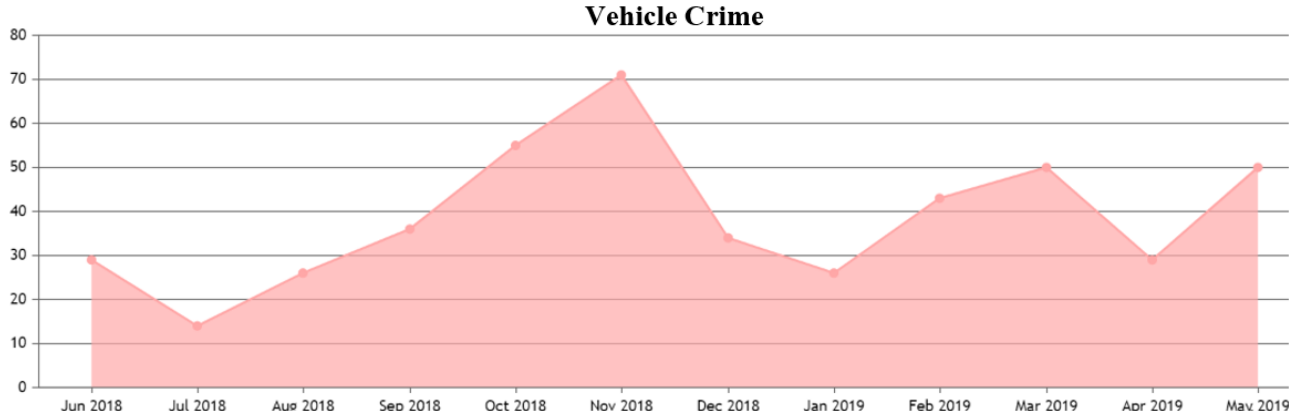


Figure 6: Ancoats Manchester, Vehicle Crime Data - June 2018-May 2019. Image sourced from: [1]

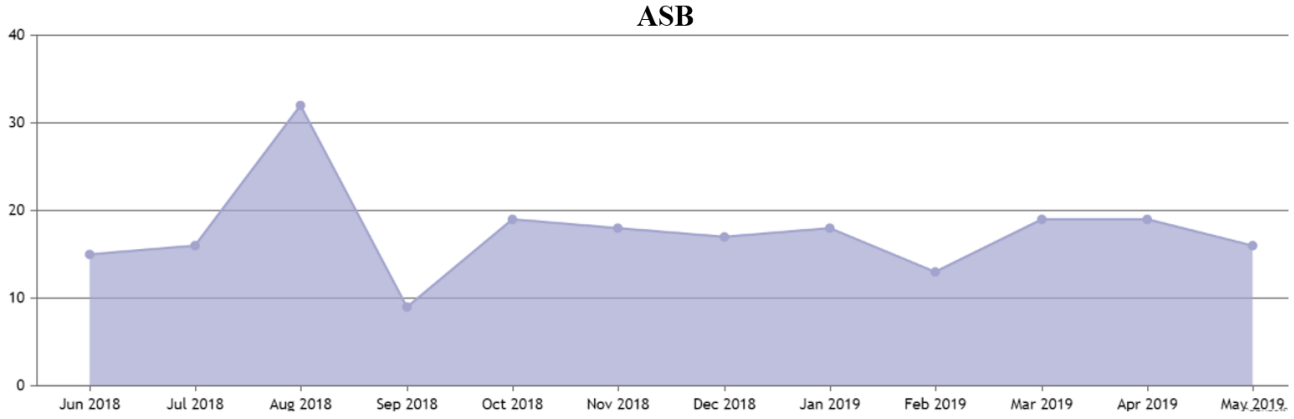


Figure 7: Ancoats Manchester, Anti-Social Behaviour Data - June 2018-May 2019. Image sourced from: [1]

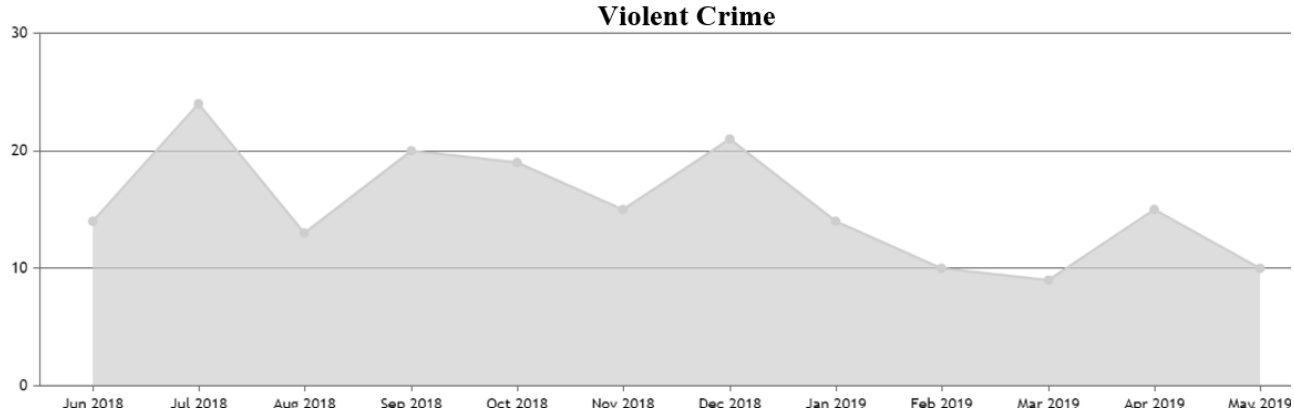


Figure 8: Ancoats Manchester, Violent Crime Data - June 2018-May 2019. Image sourced from: [1]

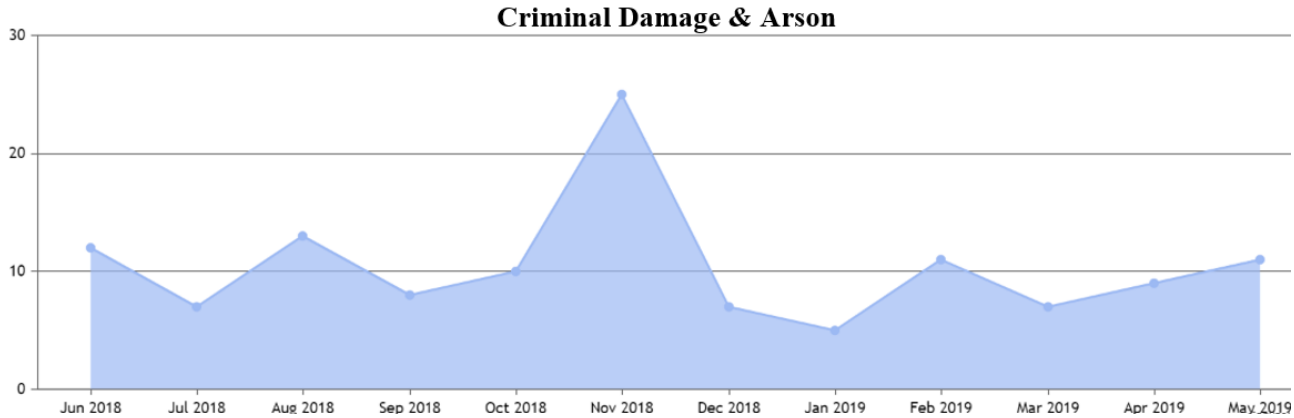


Figure 9: Ancoats Manchester, Criminal Damage & Arson Crime Data - June 2018-May 2019. Image sourced from: [1]

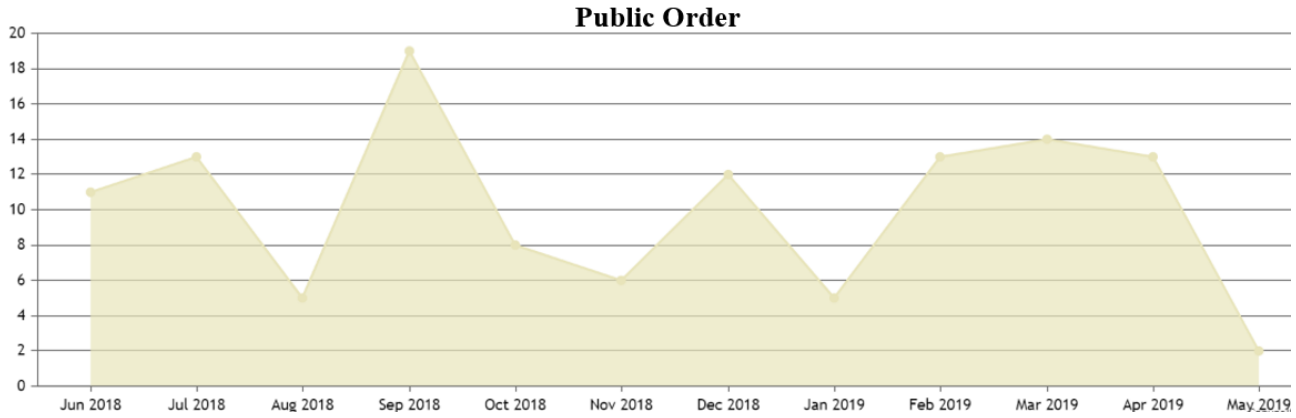


Figure 10: Ancoats Manchester, Public Order Crime Data - June 2018-May 2019. Image sourced from: [1]

2.3 Crime Rate Comparison

Figure 11 displays a comparison of crime rates for the Ancoats area (as per Figure 3) and the wider Greater Manchester area, per 1000 population between June 2018 and May 2019.

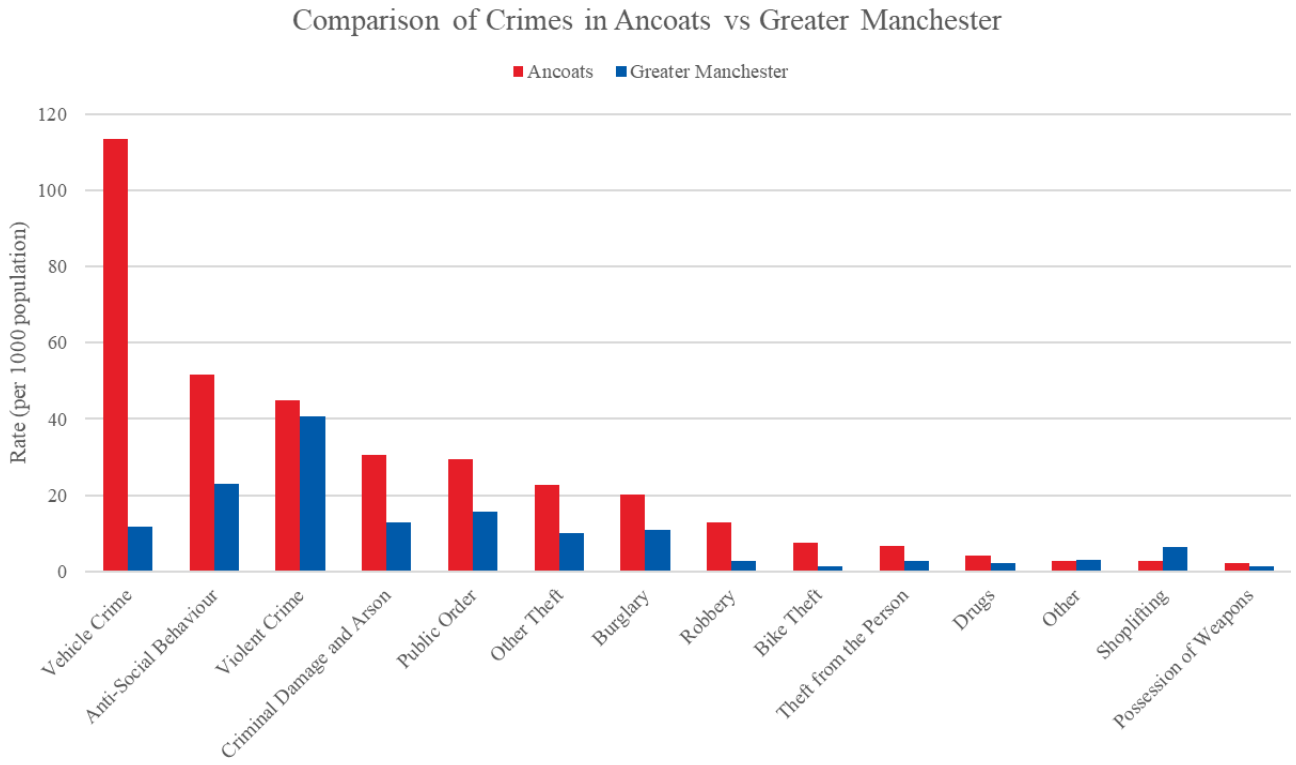


Figure 11: Comparison of Crime Rates for Ancoats vs Greater Manchester, per 1000 population between June 2018 and May 2019. Data sourced from: [1]

As shown, all crimes per 1000 population have a higher rate in the area of Ancoats, except shoplifting and other crime, when compared to the wider Greater Manchester area.

The key differences are summarised below:

- Most significant is the vehicle crime rate (incidents per 1000 population) which is approximately 850% higher in Ancoats than Greater Manchester.
- The rate of ASB (incidents per 1000 population) is approximately 120% higher in Ancoats than Greater Manchester.
- The rate of violent crime (incidents per 1000 population) is approximately 10% higher in Ancoats than Greater Manchester.

- The rate of criminal damage and arson (incidents per 1000 population) is approximately 135% higher in Ancoats than Greater Manchester.
- The rate of public order (incidents per 1000 population) is approximately 90% higher in Ancoats than Greater Manchester.

These differences are anticipated to be due to the fact that whilst there are a number of regeneration projects / developments etc currently being undertaken in Ancoats, a lot of areas are still derelict which in turn attracts certain crime types. Greater Manchester, whilst larger, is more diverse and so includes quieter, affluent, semi-rural, densely populated etc areas with varying levels of commerce, nighttime economic activity etc all of which will influence the types and levels of crime per 1000 population.

2.4 General Risk Factors

The following sub-sub sections outline the typical crime and nuisance security risks for the Civil Service buildings, commercial units and public realm spaces. These lists are based on the TVRAs undertaken as part of the design development for the campus, as well as the crime data summarised in Sections 2.1, 2.2 and 2.3 and any relevant discussions with security stakeholders on the project.

2.4.1 Civil Service Buildings

The typical crime and nuisance security risks for an operational Government Campus of this nature are as follows:

- Hoax callers.
- Unauthorised access into private buildings (including tailgating)
- Robbery of staff, visitors, or members of the public (note that robbery is theft from the person whilst the victim is present, using violence or intimidation)
- Theft of organisational assets (including burglary)
- Theft of personal possessions (including bike theft)
- Assault (including sexual assault) with or without a weapon targeting users of the public realm
- Anti-Social Behaviour
- Criminal Damage (including Graffiti & Vandalism)
- Arson
- Vagrancy/Homelessness on site perimeter, in public areas
- Urban Exploration (the activity of exploring man-made structures in an unauthorised manner)
- Theft and criminal damage during the construction phase
- Protest & Demonstrations

2.4.2 Commercial Units

The typical crime and nuisance security risks for the commercial units on site are as follows:

- Robbery of staff or members of the public (note that robbery is theft from the person whilst the victim is present, using violence or intimidation)
- Theft of assets (including burglary and shoplifting)
- Theft of personal possessions
- Theft by employees
- Assault (including sexual assault) with or without a weapon targeting staff or members of the public

- Criminal Damage (including Graffiti & Vandalism)
- Arson
- Anti-Social Behaviour
- Urban Exploration (the activity of exploring man-made structures in an unauthorised manner)
- Theft and criminal damage during the construction phase

2.4.3 Public Realm

The typical crime and nuisance security risks for the public realm areas on site are as follows:

- Robbery of staff or members of the public (note that robbery is theft from the person whilst the victim is present, using violence or intimidation)
- Theft of assets
- Theft of personal possessions (including bicycle theft)
- Assault (including sexual assault) with or without a weapon targeting staff or members of the public
- Criminal Damage (including Graffiti & Vandalism)
- Arson
- Anti-Social Behaviour
- Protest & Demonstrations
- Vagrancy/homelessness on site

3. Layout Appraisal

3.1 Proposed Site Arrangement

3.1.1 Overview

The site is a total of 2.98 hectares, and is divided into two phases, Phase 1a and Phase 1b as shown in Figure 12 and described below.

1. Phase 1a - the development of a new civil service office campus including:

- North Building comprising basement, ground plus seven floors of offices, plus enclosed and exposed rooftop plant up to 92.950 Above Ordnance Datum (AOD);
- South Building comprising basement, ground floor commercial uses, cycle parking, and occupiable office floorspace, plus six floors of offices plus enclosed and exposed rooftop plant up to Level 90.100 AOD;
- Basement level accessible car parking of 50 spaces with access via Great Ancoats Street (plus 5 spaces associated with facilities management and operations);
- The creation of new areas of public realm, including improved frontage to Great Ancoats Street, a Canal Plaza adjacent to the Rochdale Canal, and a new boulevard between the two buildings.
- An area of private landscaping adjacent to the North Building enclosed by a boundary wall and a private garden adjacent to the east elevation of the South Building; and
- Associated servicing and access arrangements.

2. Phase 1b - a package of enabling works including the establishment of new site levels (including for the future Park development being brought forward by MCC under a concurrent separate application) and permanent boundaries, removal of services, highways alterations and other associated works; and,



Figure 12: Manchester Digital Campus Site Plan. Imagery ©2024 Google, Imagery ©2024 Airbus, Maxar Technologies, Map data ©2024

3.1.2 Phase 1a

Phase 1a of the development, as described in Section 3.1.1 is approximately 2.3 hectares (23000m^2) of land. The proposal for this Phase consists of the following elements:

- Two buildings:

  - North Building: Ground plus seven floors plus enclosed and exposed rooftop plant up to 92.950 AOD
  - South Building: Ground plus six floors plus enclosed and exposed rooftop plant up to 90.100 AOD
- Office floorspace of approximately 83,000m^2 (Net Internal Area (NIA)).
- Ground floor commercial floorspace of approximately 1,000m^2 (NIA).
- Total Floorspace summarised as follows:
  - Gross Internal Area (GIA) – 84,000m^2
  - Gross External Area (GEA) – 87,000m^2
- The Manchester Digital Campus will introduce high-quality public realm spaces for use by the new building users and the wider community, including:
  - A new street-scape along Great Ancoats Street with hard landscape treatments providing high-quality environment that is activated by the prominent building edge containing a new retail offering.
  - The Canal Plaza area forms a key interface between the Ancoats conservation area and it will be both a key movement space as well as a destination. The design includes large tree planting and abundant seating within high quality hard surfacing which create a lively and engaging place.
  - It includes a pedestrianised route between the two buildings, providing the primary pedestrian access to the office entrances. This will be known as the Boulevard which aims to reinforce the digital nature of the campus with a technology focus to public realm features using lighting features and art-forms embedded into the boundary walls.
  - An area of private landscaping adjacent to the North Building enclosed by a boundary wall and a private garden adjacent to the east elevation of the South Building.
- 50No. accessible car parking spaces (plus 5 spaces associated with facilities management and operations)
- Cycle Parking Spaces. Exact number TBC.
- Access Arrangements:
  - Primary vehicle access from Great Ancoats Street plus emergency vehicle access only via Hugh Oldham Way, connecting to Old Mill Street.

3.1.3 Phase 1b

Phase 1b of the development, as described in Section 3.1.1 is approximately 0.5 hectares (5000m^2) of land.

3.2 Positive Security Aspects of the Development

The following features of the proposed development are expected to make a positive contribution to the prevention of crime and fear of crime on campus and in the surrounding areas:

- The proposed development will provide additional activity, oversight and natural surveillance of the area at all times of the day and night.
- The proposed development will bring the site back into beneficial use and overcome the anti-social behaviours that occur with derelict sites.
- The site will have a 24/7 security presence meaning detection and response elements should be heightened should an incident occur on site.
- One of the buildings will present active frontages on Great Ancoats Steet, enlivening the street scene and helping to provide useful natural surveillance over the surrounding public realm.
- The Civil Service buildings and commercial areas of the scheme will have their own dedicated external entrances, preventing confusion and/or conflicts and opportunities for criminals to exploit.

- It will not be possible to gain access into the Civil Service buildings through the commercial units.
- The basement carparking area will be secured 24/7 from both unauthorised vehicles and pedestrians.
- The cycle store proposed will be secured and will aim to prevent tailgating.
- The proposed development will include security features in the initial design of the buildings avoiding the need for retrofitted security measures.
- The scheme will be designed and delivered to include all of the physical and electronic security measures highlighted in this document.

4. Security Measures – Civil Service Buildings

The following section captures both the physical and electronic security measures due to be in place in the Civil Service buildings within the campus. The following requirements are based on the SBD Commercial Guide (2023) [2] and the GPA – Physical Security Guidance [3]. These measures should already be incorporated into the design of both buildings as a minimum.

4.1 Doors & Access Control

- External doorsets should achieve a suitable security rating in accordance with Loss Prevention Standard (LPS) 1175 Issue 8 Security Ratings [4] or similar suitable standard.
- A fail-safe and fail-secure strategy for individual doors will be developed in coordination with the fire evacuation and compartmentation strategies.
- All doors along escape routes either with access control or acting purely as an escape/panic door will be provided with devices to facilitate escape in accordance with the relevant standard pertaining to that door set.
- All external doors will have the capability to be manually and /or remotely locked down if required.
- Internal access control between different areas within the building should be provided where relevant.
- Speed gates are to be provided within main entrances.
- Portals/Airlocks are to be provided, where necessary, which should achieve a suitable security rating in accordance with LPS 1175 Issue 8 Security Ratings [4] or similar suitable standard, and other such forced entry scoring mechanisms with vandal resistant glass.

4.2 Windows & Glazing

- Accessible glazing should achieve a suitable security rating in accordance with LPS 1175 Issue 8 Security Ratings [4] or similar suitable standard.
- All accessible windows, where possible, should be certified to a minimum of BS PAS 24 [5] or similar suitable standard.
- Any curtain walling panels should be formed of laminated glazing of suitable construction and should be securely fixed slab to slab rather than to columns.
- Windows will not be openable.

4.3 Solid Walls / Façades

- Solid façades should achieve a suitable security rating in accordance with LPS 1175 Issue 8 Security Ratings [4] or similar suitable standard, although LPS 1175 rated solid façade systems are typically not available.
- There should be no features on the buildings (e.g. pipes) or nearby landscaping (e.g. lighting columns) that provide climbing aids to upper levels.
- Similarly, there should be no features on the buildings (e.g. doorways / large recesses) that provide sheltering opportunities or areas that might encourage ASB / loitering.

4.4 Boundaries

- A 3m high boundary wall will be in place around one of the buildings on site, with relevant vehicle and pedestrian access gates where required.

- Consideration should be given to the use of vandal resistant materials for the boundary walls, or ensuring the design of the walls will facilitate easy clean up e.g. use of anti-graffiti coatings.
- The area behind this boundary wall should be suitably defined as private.
- There should be no nearby landscaping (e.g. lighting columns) that provide climbing aids over the boundary.
- Where fencing is used and joins up with the wall, this should be fixed so that it is flush with the outer skin of the brickwork, leaving no steps that would inadvertently create a climbing aid, or gaps. Gates should be the same height as the adjacent wall as a minimum.
- Any pedestrian gates should be single leaf gates or if deemed necessary may require a turnstile arrangement to reduce the risk of tailgating.

4.5 Basement Car Park

- Limited parking is being provided, mostly accessible spaces for blue badge holders, and is strictly to be used by staff based at the campus.
- Access into the undercroft from Great Ancoats Street should have multiple layers. This will be achieved through the use of Hostile Vehicle Mitigation (HVM) bollards followed by two sets of roller shutters.
- Access control to the undercroft is proposed using a roller shutter or full-height gate type system to restrict entry of both vehicles and pedestrians. Note that prevention of pedestrian and vehicle access may be provided by separate systems; e.g. a shutter to prevent pedestrian access and rising bollards to prevent vehicle access.
- The vehicle entrance into the basement carpark will be controlled through the use of suitable active HVM measures. This will be achieved through active (e.g. droppable) bollards rated in accordance with BS ISO 22343-1 [6] / BS ISO 22343-2 [7] (previously PAS 68 [8] / PAS 69 [9] and IWA 14-1 [10] / IWA 14-2 [11]) to achieve an adequate level of impact rating.
- Roller shutters are proposed as part of the proposed entry and exit design layout as they, in addition to delaying and deterring potential criminals, have the capacity to delay the progress of marauding attackers and to reduce the risk of nuisance trespass by preventing pedestrian entry. The capability for continued operability in case of minor damage (e.g. criminal damage) should also be considered during the product and system selection process.
- Pedestrian access into the basement will only be achieved through secure access in either of the two Civil Service buildings i.e. it will not be possible for pedestrians to walk into the basement directly.
- There will be an additional fire/emergency escape door from the basement to the external area.

4.6 Cycle Store

- Doorsets into the cycle store should achieve a suitable security rating in accordance with Loss Prevention Standard (LPS) 1175 Issue 8 Security Ratings [4] or similar suitable standard.
- The cycle store design will aim to prevent tailgating (unauthorised access).
- Electronic Access Control Systems (EACS) should be used to control access to the cycle store.

4.7 Video Surveillance Systems (VSS)

- VSS should be in accordance with BS EN 62676: Video surveillance systems for use in security applications [29] as a minimum or similar suitable standard.
- VSS should be deployed in order to aid the following aspects of security:
  - verification of alarms;

  - perimeter monitoring;
  - identification of individuals and incidents; and
  - post-incident investigations.
- The landscaping and planting around the buildings should be designed and maintained with VSS in mind to avoid obstructing camera views.

4.8 Electronic Access Control Systems (EACS)

- Electronic Access Control Systems (EACS) should be used to control access to the buildings and within the buildings themselves to control access to certain areas.
- Access control systems (both ACS and EACS) should be designed and incorporated with fire alarm systems in mind.
  - All locking devices should be specified with due consideration of the Fire Strategy including evacuation requirements and fire ratings.
  - All components should consider the fire rating of the structure they are mounted to.
  - Emergency exits and panic doors should be provided with appropriate door release mechanisms.
- Magnetic locks (including shear locks) are not recommended for use on this project.
- EACS should be auditable i.e. knowing who has been where and when.

4.9 Perimeter Intruder Detection System (PIDS)

- Suitable Perimeter Intruder Detection Systems (PIDSs) will be in place at required locations to protect the site boundary.

4.10 Alarms

- Since the site will have 24/7 security presence, it is currently assumed that there is no requirement for a PD6662 [12] Intruder Alarm System to be provided.
- Panic alarms will be present throughout the buildings where necessary.

4.11 Lighting

- Lighting within the buildings should provide the following key elements:
  - Illumination levels appropriate to support natural surveillance and VSS. These illumination levels should not only consider horizontal illumination on the working plane but should also consider vertical illumination to ensure that persons can be captured as per the VSS Operational Requirements;
  - High quality colour rendering to aid VSS-supported operational responses and post-incident investigations;
  - Reduced glare to ensure that cameras are not negatively impacted by flares;
  - Appropriate uniformity to reduce the VSS field of view dynamic range; and
  - Coordination between light fittings and VSS cameras to ensure that fields of view are not blocked by pendants and the like.
- Where lighting cannot be provided to support the VSS for any reason, consideration should be given to the use of low light, high dynamic range cameras.
- Lighting should where possible be in accordance with the Secured by Design Lighting Against Crime guidance document [13].

4.12 Operational

- The site will have 24/7 security presence.

5. Security Measures – Commercial Units

The following section captures both the physical and electronic security measures due to be in place in the commercial units within the campus as well as general guidance on the internal layout of commercial units. The following requirements are based on the SBD Commercial Guide (2023) [2].

5.1 Internal Layout Guidance

- Clear views from inside the commercial units should be visible to the public realm spaces to increase the overall perception of safety and ensuring clear lines of escape are visible.
- Consideration should be given to the location of reception / till areas to ensure that staff have full natural surveillance over the entrance(s) to the unit.
- Internal aisles, shelves and product displays should assist natural surveillance from the reception / till areas, to ensure staff have visibility and avoid blind-spots.
- No items of high value should be placed close to the entrance(s) of the unit.
- Consideration should be given to the amount of cash that is stored in the till / register throughout the day, and whether a deposit safe or similar within the unit would be beneficial.
- All back of house areas (including staff only areas) should not be publicly accessible. These areas should be clearly signposted and have suitable access control in place to restrict access.
- There should be a location within the unit that is secure from the general public, where staff can safely store their belongings whilst at work.

5.2 Doors & Access Control

- External doorsets and doorsets to back of house areas should achieve a suitable security rating in accordance with Loss Prevention Standard (LPS) 1175 Issue 8 Security Ratings [4] or similar suitable standard.
- The external door(s) to the unit must have suitable access control in place (i.e. a lock) to ensure the likelihood of unauthorised access out of hours is reduced.
- Any letterboxes within doors must be located a minimum of 400mm away from the internal door handle and locking hardware.
- It should not be possible to access the Civil Service buildings through the commercial units i.e. there will be no doors between the two spaces.

5.3 Windows & Cladding

- Accessible glazing should achieve a suitable security rating in accordance with LPS 1175 Issue 8 Security Ratings [4] or similar suitable standard.
- All accessible windows, where possible, should be certified to a minimum of BS PAS 24 [5] or similar suitable standard.
- Any curtain walling panels should be formed of laminated glazing of suitable construction and should be securely fixed slab to slab rather than to columns.
- Any shutters should achieve a suitable security rating in accordance with LPS 1175 Issue 8 Security Ratings [4], or similar suitable standard and installed according to manufacturer instructions.

5.4 Video Surveillance Systems (VSS)

The VSS should be as per Section 4.7.

5.5 Alarms

Alarms should be in accordance with the following standards:

- BS EN 50131-10: Alarm systems. Intrusion and hold-up systems [14] or similar suitable standard.
- BS EN 60839: Alarm and electronic security systems [15] or similar suitable standard.

5.6 Lighting

Lighting should be as per Section 4.11.

6. Security Measures – Public Realm

The following section captures both the physical and electronic security measures due to be in place in the public realm areas within the campus. These measures are already incorporated into the design of the external space as a minimum.

6.1 Boundaries

- The site boundary as a whole will serve as suitable HVM. This will be achieved through a combination of concrete walling systems (3m high) and bollards rated in accordance with BS ISO 22343-1 [6] / BS ISO 22343-2 [7] (previously PAS 68 [8] / PAS 69 [9] and IWA 14-1 [10] / IWA 14-2 [11]) to achieve an adequate level of impact rating.

6.2 Landscaping

- The landscaping arrangements are understood to include low-level planting, trees, sculptural artwork, feature lighting and street furniture. The exterior design should be co-ordinated to minimise opportunities for concealment and to ensure clear lines of sight.
- All external furniture and fixtures should be of a robust vandal and graffiti resistant design. External furniture should not be located at or close to a building line or a boundary if there is a possibility of it being used as a climbing aid.
- All VSS, PIDS and lighting installations should be carefully coordinated with planting schemes and should ensure that fields of view/sensing components are not impacted by foliage. The crown base height of trees should be considered and generally should be limited with shrubs and bushes limited to 1m in height, in order to maintain clear line of sight for electronic and natural surveillance bearing in mind VSS cameras in publicly accessible spaces are generally mounted at height.
- Reliance on maintenance of flora is generally problematic, especially during the summer months and thus a large margin beyond the limits above should be provided to account for e.g. delayed maintenance.
- Flora should also be carefully designed to avoid interrupting natural and security staff surveillance sightlines across the development. In addition, consideration should be given to reducing the risk of planters and similar being used to hide weapons and illicit substances etc.
- Where architectural features are implemented, careful attention must be paid to ensure that VSS views are not concealed, obstructed or affected.
- Litter bins should be non-flammable and of a type that can be locked onto a fixed base some distance from the buildings. Litter bins should not be wall mounted and should be emptied on a regular basis.
- Where benches are installed, they should be located and specified considering the security risks of the buildings. They should be designed to avoid creating hiding/concealment opportunities, either without voids underneath or with voids large enough to easily search during routine patrols and allow for Video Analytics to detect left items e.g. weapons.
- Consideration should be given to the use of vandal resistant materials for things like litter bins and benches etc.

6.3 Video Surveillance System (VSS)

- The VSS should be in accordance with BS EN 62676: Video surveillance systems for use in security applications [29] as a minimum or similar suitable standard.
- VSS cameras should be located well above head height to make it difficult to damage / steal them.
- The VSS should be deployed in order to aid the following aspects of security:
  - verification of alarms;

  - perimeter monitoring;
  - identification of individuals and incidents; and
  - post-incident investigations.
- The landscaping and planting around the buildings should be designed and maintained with VSS in mind and avoid obstructing camera views.

6.4 Perimeter Intruder Detection Systems (PIDS)

- A suitable Perimeter Intruder Detection System (PIDS) will be in place at required locations to protect the site boundary.

6.5 Lighting

- The lighting design should consider carbon emissions, light pollution and the potential impact on the local environment and residents. Lighting of roads and footpaths in particular should be considered to ensure user safety, maintain visibility, and comply with the latest iteration of BS 5489 [16].
- Pedestrian routes should utilise mixed lighting schemes, where possible.
- Lighting in the public realm should provide the following key elements:
  - Illumination levels appropriate to support natural surveillance and the VSS. These illumination levels should not only consider horizontal illumination on the working plane but should also consider vertical illumination to ensure that persons can be captured as per the VSS Operational Requirements;
  - High quality colour rendering to aid VSS-supported operational responses and post-incident investigations;
  - Reduced glare to ensure that cameras are not negatively impacted by flares;
  - Appropriate uniformity to reduce VSS field of view dynamic range; and
  - Coordination between light fittings and VSS cameras to ensure that fields of view are not blocked by pendants and the like.
- Where necessary to achieve the above, consideration should be given to providing dedicated security lighting for certain areas around the buildings.
- Where lighting cannot be provided to support VSS for any reason, consideration should be given to the use of low light, high dynamic range cameras.
- Lighting should where possible be in accordance with the Secured by Design Lighting Against Crime guidance document [13].

7. Management and Maintenance

7.1 Civil Service Buildings

- Removal of graffiti in a timely manner should ensure that the security posture of the site is retained at a high level, demonstrate that the site is well-maintained and contribute to the perception of crime in the area is limited. This in turn should reduce the attractiveness of the area for additional crimes.
- Any high value equipment should be property marked and securely fixed or stored to reduce the chance of damage or theft. A record of all high value equipment should be maintained which logs all such items.

7.2 Commercial Units

- The commercial units should be subject to an effective security regime contract within their leasing agreement. This should ensure that tenants operate safely and securely during day-to-day operations. In order to ensure this security regime is being upheld by tenants, regular audits should be conducted of the premises. It is crucial for the successful implementation of the security regime that all staff understand the security measures in place and are able to raise concerns or report incidents/observations when they occur. The security regime should capture the following items:
  - Opening and closing of the premises.
  - How to properly manage cash within the premises.
  - How to manage stock deliveries i.e. ensuring service doors are not left opened for extended periods of time.
  - Staff security training requirements.
  - Repairing damaged internal and external fittings, including security systems e.g. locks, alarms, VSS cameras etc.
  - All damage, graffiti, litter etc is rectified or removed in a timely manner so the security posture of the entire site is not degraded.
  - Refuse collection details.
- The opening hours of commercial units should be consistent with other nearby premises.
- Any outdoor seating should be suitably secured overnight to reduce the opportunity for theft.
- Any high value equipment should be property marked and securely fixed or stored to reduce the chance of damage or theft. A record of all high value equipment should be maintained which logs all such items.

7.3 Public Realm

- Adequate signage should be in place in all public spaces to direct people through the site, and to alert the public where non-public areas are located.
- Refuse collection arrangements should not require non-public use bins to be left accessible for extended periods of time.
- Similarly, servicing activities should also not require any service doors or non-public areas to be left open and unattended for extended periods of time.
- To ensure adequate upkeep of the external areas, a suitable maintenance plan should be developed which captures the following items:
  - Repairs to public realm areas where needed e.g. lighting, signage, VSS cameras etc.

- Litter / graffiti removal. Removal of such items within a timely manner should ensure that the security posture of the site is retained at a high level, and the perception of crime in the area is limited. This in turn should reduce the attractiveness of the area for additional crimes.
- All trees within the public realm areas should be suitably clipped throughout the year, especially during spring/summer months, to ensure a clear stem of 3m (i.e. minimal leaves and branches below 3m), to allow for clear lines of sight within the space and to not obstruct VSS cameras.

8. Construction

It should be noted that a dedicated Construction Phase TVRA (CP-TVRA), which captures crime and nuisance threats throughout construction of the site, has been produced and has been used to inform the security mitigations in place throughout construction. These security mitigations are to be detailed in a Construction Phase Security Plan (CPSP) which is being produced for the site.

The following mitigations are expected to be in place during construction to reduce the opportunity of crime and nuisance:

- A temporary vehicle barrier system around the perimeter of the site.
- Appropriate vetting of site staff.
- Hoarding to be installed around the site perimeter.
- Access control into the site.
- A secure compound for materials, stores, and equipment.
- Robust external lighting (including security lighting).
- A Perimeter Intrusion Detection System (PIDS) around the entire perimeter of the site.
- An Intrusion Detection System (IDS) at key areas of the site e.g. entrances into secure compounds.
- Natural Surveillance i.e. members of the public or site workers observing, witnessing, and reporting criminal acts to the relevant law enforcement agency.
- Trained security staff presence and guard patrolling (assumed to be 24/7).
- Response from law enforcement and emergency services in Greater Manchester e.g. GMP.
- An extensive Video Surveillance System (VSS) and monitoring (assumed to be 24/7).
- Appropriate measures to immobilise and alarm construction vehicles when not in use.

The mitigations presented above should be in place during the relevant phases of construction to ensure proportionate security e.g. it may be deemed that a PIDS are not necessary during the enabling works phase.

9. Useful References

9.1 Crime Prevention Through Environmental Design (CPTED)

CPTED is a crime prevention theory that encourages designers to think holistically about security from an early stage to ensure that potential security issues are identified, considered and designed-out. It does this by providing advice on tactical design and use of the built environment to ensure that a proposed build/refurbishment discourages a would-be perpetrator from committing a crime and then makes it harder should one be attempted. It also seeks to provide spaces/buildings that are open and welcoming to legitimate users and reduces the fear of crime.

The GMP Design for Security division define CPTED as comprising of five principles [17]:

- Physical security: the measures which are used on individual buildings to ensure that they withstand attack.
- Surveillance: design ensuring that residents/occupants can observe the areas surrounding their building. Surveillance can be facilitated by ensuring that front doors face onto the street; that areas are well illuminated, and blank walls are avoided.
- Movement control: the restriction of access, egress and through movement (high levels of through movement allow offenders to access and egress an area); permits identification of targets and increases anonymity.
- Management and maintenance: the processes are in place to ensure that a development is free from signs of disorder. This signals that the area is cared for.
- Defensible space: the ownership of space in a neighbourhood should be clearly defined. For example: public (e.g. pavement); semi-public (e.g. front garden); semi-private (e.g. rear garden) and private (e.g. inside the home).

Furthermore, there are three ways in which the physical environment may be managed to reduce the opportunity for crime:

- Natural – inclusion of basic security and behavioural provisions, influencing how spaces/buildings are used (e.g. definition of borders, windows for surveillance).
- Organised – formal, human security (e.g. police, patrols).
- Mechanical – incorporation of security hardware (e.g. VSS, locks, lighting).

9.2 Secured By Design (SBD)

Secured by Design (SBD) is a British police initiative that is based upon Crime Prevention Through Environmental Design (CPTED) principles. It seeks to provide relevant CPTED advice to the design and construction of specific buildings (homes, hospitals, rail stations etc). For Phase 1a of this development, the most relevant guidance can be found in the "Commercial Developments 2015 v2" [18] document.

It offers a mixture of prescriptive, specific requirements (for SBD certification) as well as recommendations and best practices that should be followed where possible. It covers measures for the reduction of crime against persons and properties with regards to burglary, theft, arson, vehicle crime and assault. It also aims to help reduce the fear of crime and anti-social behaviours.

Ideally, this guidance would be considered and incorporated during a building's early design stages and before construction has begun to avoid potentially more costly retrofitting of security measures.

Despite being more refined and focused than generic CPTED advice, the SBD Commercial Developments guidance is not a 'menu of requirements'; the variety of commercial developments is large and there is no 'one size fits all' approach.

According to seven attributes of sustainable communities, reduced levels of crime and ASB can be achieved when areas are designed/altered to incorporate the following attributes:

- Access and movement: places with well-defined and well used routes with spaces and entrances that provide for convenient movement without compromising security.
- Structure: places that are structured so that different uses do not cause conflict.
- Surveillance: places where all publicly accessible spaces are overlooked.
- Ownership: places that promote a sense of ownership, respect, territorial responsibility, and community.
- Physical protection: places that include necessary, well-designed security features.
- Activity: places where the level of human activity is appropriate to the location and creates a reduced risk of crime and a sense of safety at all times.
- Management and maintenance: places that are designed with management and maintenance in mind, to discourage crime in the present and the future, encouraging businesses and legitimate business users to feel a sense of ownership and responsibility for their surroundings can make an important contribution to community safety and crime prevention. Clarity in defining the use of space can help to achieve a feeling of wellbeing and limit opportunities for crime.

The SBD advice, therefore, seeks to maximise these characteristics in the design of new-build developments and alterations to existing developments. Although it is yet to be confirmed if official SBD accreditation is being sought for the project, the principles of SBD are applicable and should be incorporated during design development. The SBD requirements have also been considered when developing the baseline physical security measures for the project. The above principles should continue to be considered and implemented in future design works for the development.

10. Conclusion

This CIS outlined the development of MDC, its intended key features, and how the development is anticipated to impact crime and nuisance in the area in a positive way.

Throughout the design development of MDC, the key principles of Crime Prevention Through Environmental Design (CPTED) have been carefully considered in order to reduce the opportunities for crime and the fear of crime. It should be noted that dedicated Threat, Vulnerability and Risk Assessments (TVRAs) which capture crime and nuisance threats have been produced for the relevant aspects of the site and have been used to inform the security mitigations that are to be put in place.

The CIS is issued to enable relevant Design for Security Consultants within Greater Manchester Police (GMP) to determine whether they would be happy to support the development on this basis.

References

[1] UKCrimeStats, “Ancoats,” [Online]. Available: https://www.ukcrimestats.com/Neighbourhood/8874. [Accessed 23 March 2023].

[2] Secured By Design, “Commercial,” 2023.

[3] Government Propery Agency, *Physical Security Standards and Guidance v3.0,* 2021.

[4] BRE Global Ltd, “Loss Prevention Standard. LPS 1175: Issue 8.1.,” 2020.

[5] British Standards Institution, “PAS 24:2022. Enhanced security performance requirements for doorsets and windows in the UK.,” British Standards Institution, 2022.

[6] British Standards Institution , “BS ISO 22343-1:2023. Security and resilience — Vehicle security barriers. Part 1: Performance requirement, vehicle impact test method and performance rating.,” British Standards Institution , 2023.

[7] British Standards Institution , “BS ISO 22343-2:2023. Security and resilience — Vehicle security barriers. Part 2: Application,” British Standards Institution , 2023.

[8] British Standards Institution, “PAS 68:2013: Impact test specifications for vehicle security barrier systems,” The British Standards Institution, 2013.

[9] British Standards Institution, “PAS 69: 2013: Guidance for the selection, installation and use of vehicle security barrier systems,” British Standards Institution, 2013.

[10] International Organisation for Standardisation (ISO), “IWA 14-1: Vehicle security barriers - Part 1: Performance requirement, vehicle impact test method and performance rating.,” 2013.

[11] International Organisation for Standardisation (ISO), “IWA 14-2: Vehicle security barriers - Part 2: Application,” 2013.

[12] British Standards Institution, “PD 6662:2017. Scheme for the application of European Standards for intrusion and hold-up alarm systems,” 2017.

[13] Secured by Design, “Lighting against crime,” 2011.

[14] British Standards Institution, “BS EN 50131-1:2018+A3:2020 Alarm Systems - Intrusion and hold-up systems,” bsi, 2018.

[15] British Standards Institution, “BS EN 60839 - Alarm and electronic security systems,” BSI, 2015.

[16] British Standards Institution , “BS 5489-1:2020. Design of road lighting. Part 1: Lighting of roads and public amenity areas — Code of practice,” British Standards Institution , 2020.

[17] Greater Manchester Police. Design for Security., “Crime Prevention Through Environmental Design,” Greater Manchester Police, 2023. [Online]. Available: https://designforsecurity.org/crime-prevention-through-environmental-design/. [Accessed 10 August 2023].

[18] Police Crime Prevention Initiatives, “Secured By Design Commercial 2015,” 2015. [Online]. Available: https://www.securedbydesign.com/guidance/research-case-studies-guidance/sbd-guidance/sbd-commercial-2015. [Accessed 03 2023].