

FLOOD RISK STATEMENT - SYDNEY AVENUE PLANNING APPLICATION SUITABLE FOR ISSUE

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Manchester Airport Ltd

MAG Landside - FI, SA & VCC
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1. Introduction

1.1 Background

Manchester Airports Group (MAG) continues to invest in its airport infrastructure. MAG are close to completion of the Manchester Airport Transformation Programme (MAN-TP), a £1.3bn investment programme that will transform passenger experiences and help attract yet more of the world's leading airlines. The transformation was first announced in 2015 with a 10-year vision to revolutionise the customer experience at the Northern hub and unlock the potential of its two full-length runways. The programme involves an extension, doubling the size of Terminal 2 (T2) and refurbishing the original terminal, including the construction of two new aircraft piers, creation of a state-of-the-art baggage hall, installing next generation scanners in a new security hall, additional retail and food and beverage outlets as well upgrading the airfield and taxiways to cater for next generation aircraft. It also includes the development of the landside road network to allow sufficient capacity and access to the terminal to drop off passengers, pick-up passengers as well as additional car parking.

In review of this landside road network, a traffic modelling exercise has been undertaken to review various parts of the road network and the impacts of increasing traffic numbers in the area following the opening of the full Terminal 2 following the completion of MAN-TP in 2025. This exercise has concluded the need for changes to the road network at the western end of T2. With the existing layout, the Sydney Avenue junction with Thorley Lane is anticipated to be over capacity with queues extending into the West End Roundabout and Palma Avenue, therefore blocking the forecourt exit. An optioneering exercise for solutions was undertaken and the option now progressed is for the closure of the existing short Sydney Avenue and construction of a new link road/carriageway from the western side of the existing West End roundabout and connecting into Thorley Lane via a new signal-controlled junction. The proposed project includes the following:

- A new carriageway from the West End Roundabout (where Palma Avenue and Sydney Avenue meet) via the existing Staff West Car Park to Thorley Lane (including a 3.0m wide shared footway/cycleway)
- Widening of Thorley Lane to accommodate a signal-controlled junction between the new carriageway and Thorley Lane
- The upgrade of the existing Thorley Lane junction with Runger Lane to a signalised junction.
- Creation of a 3m wide shared footway/cycleway on Thorley Lane.
- Closure of the existing Sydney Avenue carriageway from the West End Roundabout to Thorley Lane and associated retention and realignment of the existing footpaths and cycleway
- Creation of a new exit from the West End Roundabout into the existing Staff West car park

The planning application is limited to seeking planning permission for the creation of a new access from the northern end of the new road to the Thorley Lane carriageway. The extent of the planning application boundary and the extent of the project boundary (defined in text as proposed development) are shown on the plan in Appendix B.

The proposed Sydney Avenue Link is as shown in Appendix A.

This FRA forms part of the Planning Application to be submitted by MAG. The FRA has been prepared by Jacobs on behalf of MAG who have commissioned this assessment in accordance with the Communities and Local Government's National Planning Policy Framework (NPPF)¹, which lays out the principles for FRA's in England.

¹ Department for Levelling Up, Housing & Communities. (2023). *National Planning Policy Framework*. Available from: https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF_December_2023.pdf (Accessed 17/04/24)

1.2 Objectives of the Flood Risk Assessment

In accordance with the requirements of national and local planning policy (see Section 2.3), this FRA:

- Includes an assessment of the flood risk to the proposed Sydney Avenue Link in its entirety demonstrating that the intended use is appropriate in terms of flood risk;
- Includes an assessment of the predicted impact of the proposed Sydney Avenue Link upon flood risk;
- Demonstrates that the proposed Sydney Avenue Link will not have a deleterious impact upon flood risk to other parties; and
- Summarises any mitigation measures required to achieve this outcome.

2. Flood Risk Policy / National Planning Policy

2.1 National Planning Policy Framework

Published in 2023 the NPPF sets out the UK Government's planning policies for England. The NPPF details the Sequential and Exception Tests to protect people and property from flooding, which all local planning authorities are required to follow. Where these tests are not passed, national policy is clear that new developments should not be permitted. The Sequential Test is designed to ensure that new developments are steered towards areas of low flood risk where possible. The NPPF is supported by National Planning Policy Guidance (NPPG). This provides further guidance to local planning authorities to help with the effective implementation of planning policy for developments in areas at risk of flooding.

2.1.1 Site-Specific Flood Risk Assessment

Footnote 55 in the NPPF states that a site-specific FRA is required for developments larger than 1 hectare within Flood Zone 1; all proposals for new developments (including minor developments and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems, as notified to the local planning authority by the EA. A site-specific FRA is also required where proposed developments or a change of use to a more vulnerable class may be subject to other sources of flooding.

Additionally, the FRA should demonstrate to the regulator how flood risk will be managed now and over the lifetime of the development; taking climate change into account, and with regard to the vulnerability of its users. As stated in the NPPF, the FRA should establish:

- Whether the proposed development is likely to be affected by current or future flooding from any source;
- Whether it will increase flood risk elsewhere;
- Whether the measures proposed to deal with these effects and risks are appropriate;
- The evidence for the local planning authority to apply (if necessary) the Sequential Test; and
- Whether the development will be safe and pass the Exception Test, if applicable.

The proposed project is in Flood Zone 1 but is more than 1 hectare in size and therefore an FRA is required. The planning application red line site boundary itself is much smaller than 1 hectare.

2.2 Vulnerability Classification

Table 2 of the Flood Zone and Flood Risk Tables section of the NPPG² classifies the flood risk vulnerability of all land uses. As the proposed development is a road that provides benefits to existing traffic, it is classed as "Less Vulnerable" development.

2.2.1 The Sequential Test

The Sequential Test ensures that a sequential approach is followed to steer new developments to areas with the lowest probability of flooding. The Flood Zones defined in the EA Flood Map for Planning³ are used to identify if the Sequential Test will be passed. The aim is to steer new developments to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1 local planning authorities should consider the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the

² Department for Levelling Up, Housing and Communities. (2024). *Planning Practice Guidance*. Available from: <https://www.gov.uk/government/collections/planning-practice-guidance> (Accessed 17/04/24)

³ Environment Agency. (2023). *Flood Map for Planning*. Available from: <https://flood-map-for-planning.service.gov.uk/> (Accessed 17/04/24)

suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, considering the flood risk vulnerability of land uses and applying the Exception Test if required.

According to the EA Flood Map for Planning, the proposed development is located in Flood Zone 1. This suggests the annual probability of fluvial flooding will be less than 0.1% (1 in 1000) Annual Exceedance Probability (AEP).

Table 3 of the NPPG (reproduced here as Table 1) defines appropriate land uses for each Flood Zone and helps guide development to areas of lower flood risk. As Less Vulnerable, the proposed development would be considered appropriate within Flood Zone 1, Flood Zone 2 and Flood Zone 3a, however should not be permitted within Flood Zone 3b (Environment Agency, 2021).

Table 1. Flood Risk Vulnerability (NPPG Table 3)

Flood Vulnerability Classification (Flood Zone)	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	✓	✓	✓	✓	✓
2	✓	Exception Test Required	✓	✓	✓
3a	Exception Test Required	×	Exception Test Required	✓	✓
3b	Exception Test Required	×	×	×	✓

✓ = Development is appropriate, × = Development should not be permitted

The proposed development is located within Flood Zone 1. Therefore, the Sequential Test is considered to be passed and the development is considered appropriate.

2.2.2 The Exception Test

The proposed development is considered to be Less Vulnerable. Therefore, according to Table 2-1, the Exception Test is not required to be satisfied in this instance given the proposed development lies within Flood Zone 1.

2.3 Local Flood Risk Policy Guidance

The proposed development is within an area governed by Manchester City Council, as both the Lead Local Flood Authority (LLFA) and Local Planning Authority (LPA). Guidance of relevance to the proposed development is included below.

2.3.1 Manchester City, Salford City and Trafford Councils Strategic Flood Risk Assessment

The Manchester City, Salford City and Trafford Councils Level 1 Strategic Flood Risk Assessment (SFRA)⁴ provides an overview of flood risk within the area and guidance for considering flood risk in the process of determining planning applications for development.

The Level 1 part of the SFRA has predominantly used existing data to conduct an assessment on flood risk from all sources in 2010 and in the future to provide evidence for LPA officers to apply the Sequential Test and identify the need to pass the Exception Test where required.

The Level 2 part of the SFRA provides more detailed information on flood risk from rivers, canals, surface water and sewers. It also looks at the impacts of development on flood risk and the interactions between different sources of flooding. The additional detail can also inform a sequential approach to development allocation within flood risk areas, the likelihood of sites passing the Exception Test and mitigation options where appropriate.

Manchester Airport is discussed within the SFRA which states the following:

- The primary risk to Manchester Airport is surface water (although low risk) and a secondary risk from Timperley Brook and Fairywell Brook. The risk from surface water and fluvial will require careful management of key issues such as runoff and exceedance.
- An SWMP including the Airport should be undertaken due to potential local flood risk. This will look in detail at drainage assets and local flood risk and assess feasible options for reducing risk. This should include a drainage strategy for development sites, to identify areas suitable for SUDS and how flood risk can be managed and reduced downstream.
- Fairywell and Timperley Brooks should be explored further in an FRA in regard to Manchester Airport.
- Development sites located within Manchester Airport should include a drainage strategy to identify areas suitable for SUDS and how flood risk can be managed and reduced downstream.

The Greater Manchester SWMP⁵ does not explicitly mention anything related to flood risk to Manchester Airport and therefore, the SWMP has not been used to infer any information on drainage and flood risk within the proposed development area.

2.3.2 Manchester Core Strategy 2012 – 2027 (Adopted 2012)

The Manchester Core Strategy⁶ brings together all major planning policies, proposals, and actions to meet the environmental, social, and economic challenges facing the area from 2012-2027, for the district into a single document (Manchester City Council, 2012).

Flood Risk is covered by Policy EN 14 which states the following:

- In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account of all sources of flooding identified in the Manchester City, Salford City and Trafford Councils SFRA.

⁴ JBA Consulting. (2011). *Manchester City, Salford City and Trafford Councils Level 2 SFRA*. Available from: https://www.manchester.gov.uk/info/500207/planning_and_regeneration/4700/strategic_flood_risk_assessment/2 (Accessed 17/04/24)

⁵ JBA Consulting. (2012). *Greater Manchester Surface Water Management Plan*. Available from: <https://www.bury.gov.uk/asset-library/greater-manchester-surface-water-management-plan-stage-1-report.pdf> (Accessed 18/04/24)

⁶ Manchester City Council. (2012). *Local Plan*. Available from: https://www.manchester.gov.uk/info/200074/planning/6572/local_plan (Accessed 17/04/24)

- In addition to the requirements for site-specific FRAs set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 1 hectare within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.
- All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure. Developers should have regard to the surface water run-off rates. In CDAs, evidence to justify the surface water run-off approach / rates will be required.
- The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure.

2.4 Climate Change

The EA guidance on climate change allowances⁷ has been considered for this assessment. The EA guidance details the level of climate change required to assess the impacts of climate change on flooding for new developments, this is dependent on the location (Flood Zones), design life and vulnerability classification, detailed in Table 2 of the NPPG⁸.

According to Table 2 of the NPPG (flood risk vulnerability classification), less vulnerable development would be classed as 'uses where temporary disruption is acceptable and the development remains safe'. For less vulnerable development, EA's guidance states that allowances for climate change should be assessed using the Central change allowance if in Flood Zone 2 or 3, or that are Flood Zone 1 currently but might be 2 or 3 in the future.

2.4.1 Peak River Flow

The peak river flow allowance that is recommended by the EA to assess impacts of climate change is determined by the location of the proposed development in relation to the identified river basin districts. The proposed development is located within the Mersey Upper Management Catchment River basin district. The climate change allowances for peak river flow within this river basin district are detailed in Table 2.

Table 2. Recommended climate change allowance for Peak River Flow, Mersey Upper Management Catchment River basin (Environment Agency)

Mersey Upper Management Catchment River basin district	Total potential change anticipated for '2020s' (2015 to 2039)	Total potential change anticipated for '2050s' (2040 to 2069)	Total potential change anticipated for '2080s' (2070 to 2115)
Upper	27%	51%	85%
Higher	17%	31%	53%
Central	13%	22%	41%

2.4.2 Peak Rainfall Intensity

The EA guidance also states the potential increase in rainfall intensity due to climate change should be considered within an FRA for the Central and Upper end allowances. Assuming a 100-year design life from 2024, this corresponds to a climate change allowance of 30% for rainfall intensity using the central allowance and 45% for rainfall intensity using the upper end allowance in the 1% AEP event, as per Table 3.

⁷ Environment Agency. (2022). *Flood Risk Assessments: climate change allowances*. Available from: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> (Accessed 17/04/24)

⁸ Department for Levelling Up, Housing and Communities. (2024). *Planning Practice Guidance*. Available from: <https://www.gov.uk/government/collections/planning-practice-guidance> (Accessed 17/04/24)

For a 3.3% AEP event this corresponds to a climate change allowance of 30% using the central allowance and 40% using the upper end allowance.

Table 3. Recommended climate change allowance for Peak Rainfall Intensity in small and urban catchments (Environment Agency)

Upper Mersey Management Catchment River basin basin district	1% Annual Exceedance Rainfall Event		3.3% Annual Exceedance Rainfall Event	
	Total potential change anticipated for '2050s' (2040 to 2069)	Total potential change anticipated for '2070s' (2060 to 2089)	Total potential change anticipated for '2050s' (2040 to 2069)	Total potential change anticipated for '2070s' (2060 to 2089)
Upper End	40%	45%	35%	40%
Central	25%	30%	20%	30%

3. Site Characteristics

3.1 Location

Refer to Figure 1 for a location plan. The proposed new road extends 200m long from T2's West End Roundabout from one lane to two lane exit onto Thornley Lane.

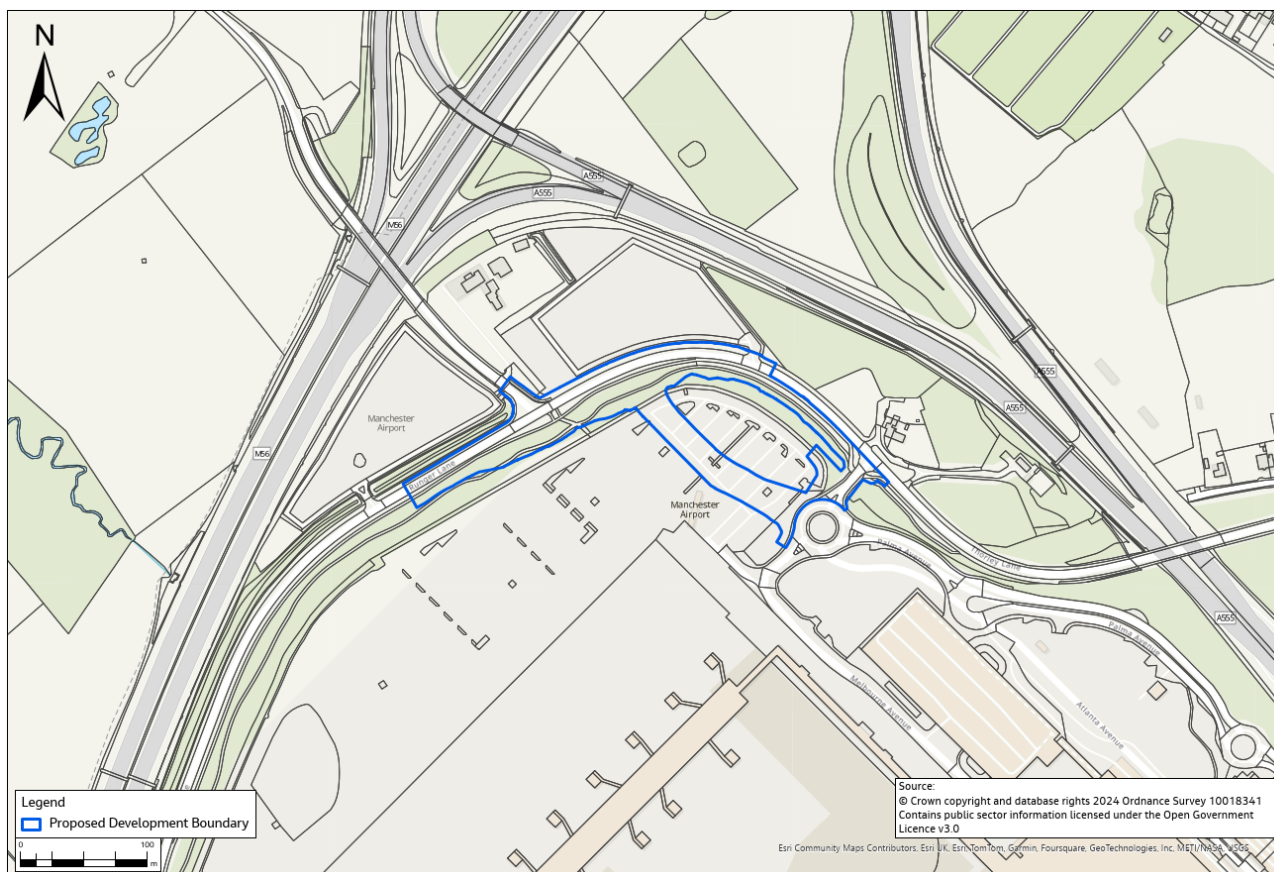


Figure 1. Proposed development study area

3.2 Existing Site Characteristics

Land use within the proposed development boundary consists of vegetation, airport staff car parking and the existing Thorley Lane and Sydney Avenue carriageways. Thorley Lane connects to Runger Lane which is the route from Junction 6 of the M56 to the airport.

3.3 Topography

In general, the ground level across the proposed development rises from west to east. Typical elevation values along the development are approximately 65.9 metres above Ordinance Datum (mAOD) for the western extent along Thornley Lane rising to 68.4 mAOD up to the roundabout on Palma Avenue.

3.4 Geology

British Geological Survey (BGS) mapping⁹ indicates superficial deposits beneath the proposed development are designated as Till Devensian deposits -clay, sand, gravel, and boulders varying widely in size.

Underlying bedrock is designated as Bollin Mudstone Formation – Mudstone with Siltstones.

3.5 Surface Water Features / Local Watercourses

The nearest Main River is Fairywell Brook which generally flows north-westerly approximately 170m north of the proposed development. An additional Main River named Timperley Brook is identified to be culverted under the airport runway. The Brook generally flows north-westerly approximately 200m south of the proposed development.

In addition to these Main Rivers, there is one other Ordinary Watercourse in the vicinity of the site named Baguley Brook which is culverted and flows northerly from directly east of Painswick Park and continues along the green corridor towards Kirkup Gardens. Such Ordinary Watercourses are typically not included within the EA Flood Map for Planning due to their small catchment.

3.6 Existing Drainage

The existing surface water drainage is shown in Appendix A and runs directly to the south of the new link road, with a number of surface water pipes connected that flow into the system from the car park to the north. Thornley Lane is drained by an additional surface water pipe which runs along the west side of the road. There are no known foul water services located in the area of the works.

Refer to Appendix A of the proposed surface water drainage strategy for further detail of existing drainage catchments.

3.7 Proposed Works

The proposed Sydney Avenue Link is a 200m long section of new single lane carriageway, designed to replace the existing Sydney Avenue. The proposed Sydney Avenue Link is required to provide the resilience for the anticipated increase in traffic flows when the expansion of Terminal 2 is completed in April 2025. It is located to the north-west of Terminal 2.

3.7.1 Proposed Drainage

The Surface Water Drainage for the proposed development has been developed in accordance with the Manchester City Council (MCC) Highway Services standard details.

The Proposed Drainage is split into two sections. To the east of Thornley Lane (i.e. the blue hatch section on Appendix A and any area east of this) including the existing car park is land draining to the MAG network, and areas to the west of Thornley Lane (i.e. the purple hatch section on Appendix A including the existing and proposed carriageway and grass verge) drain to the MCC network.

3.7.1.1 Areas draining to the MAG network.

The modifications around Sydney Avenue include replacing the existing highway with soft landscaping and installing a new Staff West Car Park access road. These amendments pose no net increase in catchment size, with the new permeable landscaping offsetting the impermeable car park access road. The existing gullies serving Sydney Avenue are to be removed and new highway gullies are to be installed along the proposed kerb line and shall tie into the existing surface water drain. A new combined kerb drain is to run along the full

⁹ British Geological Survey. (2023). *GeoIndex Onshore*. Available from:
https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.3798192.1631296128.1713366288-1599158224.1713366288
(Accessed 17/04/24)

length of the proposed verge to collect flows from the existing car park, discharging to the existing carrier drains via catchpits.

The new Thorley Link highway introduces verges in addition to a new catchment area in an existing vegetated area at the Thorley Lane junction. This new impermeable catchment of 261m² is proposed to be offset by the new verges along the proposed highway which are more than 560m².

Gullies to collect surface water from the proposed highway are to be provided along the proposed kerb line and shall tie in to the existing 225mm carrier drains crossing the new Thorley Link road. The locations of these gullies and confirmation of the carrier pipe dimensions and capacities are required at detailed design. Any protection required for the existing carrier pipes shall also be confirmed at detailed design.

Surface water from Thorley Lane has the potential to runoff onto the new Thorley Link road carriageway. As such, gullies are proposed on both sides of the carriageway on the boundary between MAG and MCC land and shall tie into the existing carrier drains in the new Thorley Link road.

The existing gullies and drainage clashing with the new highway alignment are to be abandoned. Existing chamber covers and ironworks in the proposed pavement adjacent to the new Thorley Link road are to be reviewed in relation to the proposed pavement levels and adjusted, as necessary.

3.7.1.2 Areas draining to the MCC network.

The carriageway widening on Thorley Lane/ Runger Lane results in an increase of impermeable area of approximately 1607m². This area is outside the MAG boundary and liaison with MCC at design and build stage is required to agree acceptable levels of discharge into the downstream drainage network. The line of the surface water system has been interpolated from the 2023 utility survey results. Provisional gully-pot locations have been proposed at 15-20m spacing and are to tie-in to the line of the existing 450mm diameter surface water sewer running down Thorley Lane. An open grass channel has been proposed along the base of the new embankment along Thorley Lane to manage flows from the new bank and footpath, discharging to a new chamber at the southern-end and flowing via a carrier drain to an attenuation system or to the existing 450mm diameter sewer.

4. Flood Risk

4.1 Basis of Assessment

In accordance with the NPPF an assessment of the flood risk to the proposed development has been completed based on the following sources of information:

- Flood risk information available from EA online mapping; and
- Strategic Flood Risk Assessment (Manchester City, Salford City and Trafford Councils)

The impact of the development on all sources of flood risk has considered the following forms of flooding:

- Coastal/tidal;
- Fluvial;
- Surface water;
- Sewer flooding;
- Groundwater flooding;
- Reservoir failure; and
- Flood defence failure.

Coastal/tidal flood risk is considered to be negligible given the location of the proposed development and has therefore not been considered further.

The definitions of each flood source are provided below:

- Fluvial flooding is classified as high risk in Flood Zone 3 (1% AEP event or greater). Moderate risk is classified as Flood Zone 2 (between a 1% and 0.1% AEP event) with Flood Zone 1 (less than 0.1% AEP) identified as low risk.
- Surface water flooding is classified as low risk (less than 0.1% AEP event), moderate risk (1% AEP event), high risk (3.3% AEP event).
- Sewer and Groundwater flooding has not been assessed with probabilities. Therefore, the level of risk has been determined from supporting datasets and professional judgement to comment on potential groundwater flooding sources and mechanisms.

4.2 Assessment of Flood Risk

4.2.1 Fluvial Flood Risk

Fluvial flooding occurs when waterways such as rivers, streams or brooks overflow their banks into surrounding areas. This risk is most likely to occur following periods of intense rainfall and will become more frequent as a result of climate change.

4.2.1.1 Existing Risk

The EA Flood Map for Planning indicates the natural floodplain for areas at risk from river and tidal flooding (ignoring the presence and effect of defences). The proposed development will lie within Flood Zone 1 (see Figure 2).

It is important to note Ordinary Watercourses are typically not included within the EA Flood Map for Planning modelling due to their small catchment area but there could be a potential risk of flooding from this source. There are ordinary watercourses within the surrounding area, see section 3.5, however, given their size and

the lack of reported flood history online and in EA Historic Flood Map¹⁰ layer, the flood risk from these watercourses have been inferred using the EA's Surface Water Flood Risk mapping¹¹. Considering the extents of the 3.3% AEP and 1% AEP event do not encroach on the proposed development, and the flow path from the 0.1% AEP event is likely a surface water mechanism due to depressions and rainfall, the risk is deemed low. Furthermore, given the area is within Flood Zone 1, the fluvial flood risk to the proposed development is considered low.

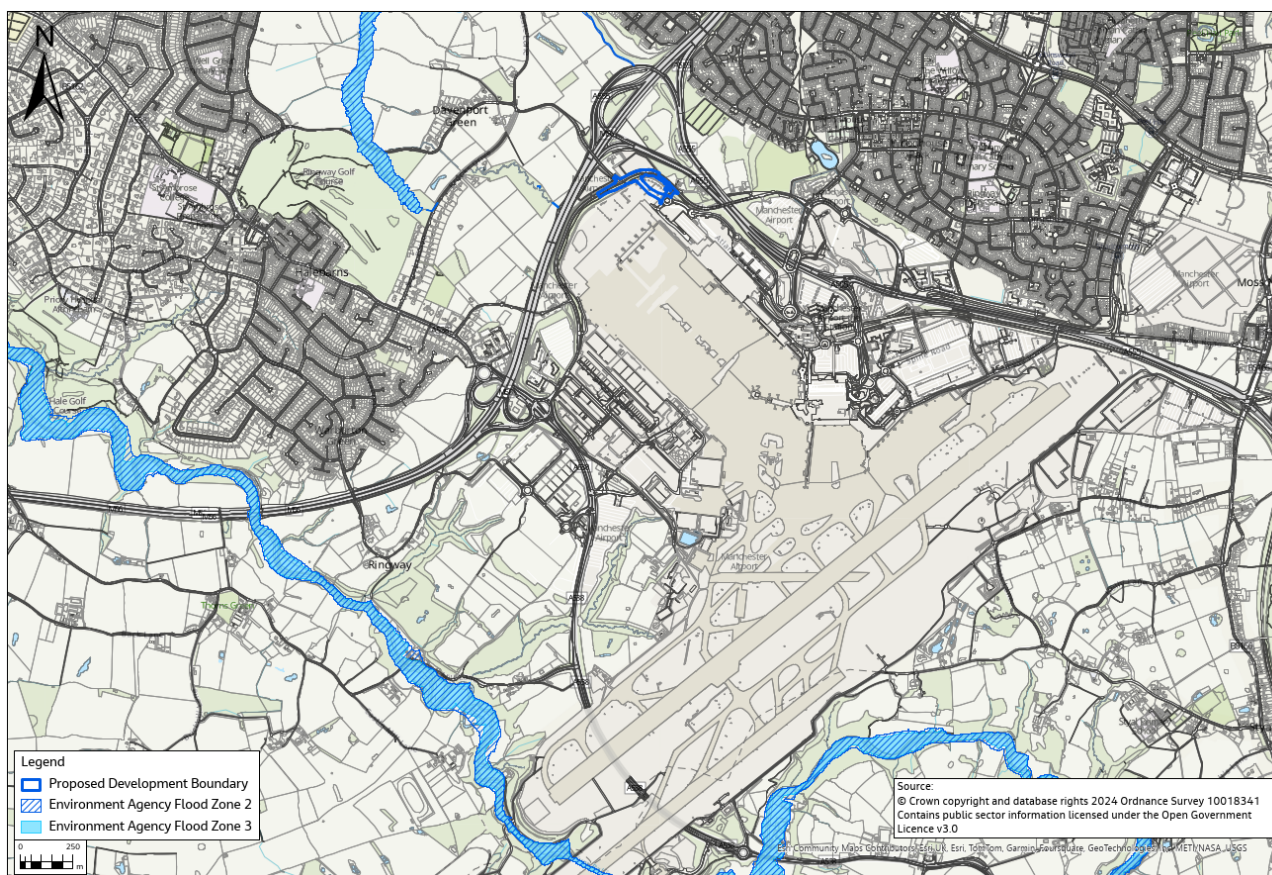


Figure 2. Fluvial Flood Risk to the proposed development

4.2.1.2 With Scheme Risk

No loss of active floodplain will occur as a result of the proposed development (during construction and when the proposed development is in place).

Therefore, no floodplain storage will be lost and consequently no mitigation is proposed. Therefore, the risk of fluvial flooding is still considered low. Given the scale of the proposed development and the small size of the ordinary watercourses near to the proposed development, it is not expected that the impact of the proposed development on fluvial flood risk will change with climate change and increased river flows (which were set out in section 2.4.1).

¹⁰ Environment Agency. (2024). *Historic Flood Map*. Available from: <https://www.data.gov.uk/dataset/76292bec-7d8b-43e8-9c98-02734fd89c81/historic-flood-map> (Accessed 17/04/24)

¹¹ Environment Agency. (2023). *Risk of Flooding from Surface Water*. Available from: <https://www.gov.uk/check-long-term-flood-risk> (Accessed 17/04/24)

4.2.2.2 With Scheme Risk

The proposed development is predominantly on land that is currently impermeable surface (car park). On MAG land there will be an increase in permeable area as part of the proposed development. Therefore, this will be a beneficial impact which will reduce surface run-off.

On MCC land there is an increase in impermeable area (1,607m²) draining toward Thorley Lane – see purple hatching on Appendix A. Greenfield run-off rates have been calculated for the area of the proposed new road over existing greenfield land – the average discharge rate of 0.94 l/s calculated should be adhered to when connecting flows from the new impermeable area into the existing network in Thorley Lane, with this flow rate set as the limit. Storage and attenuation requirements are to be determined in-line with the 1% (1 in 100) AEP event with an allowance for climate change of 45%.

With attenuation provided to restrict flows to the greenfield level for the areas of new impermeable area, and increase in permeable area on MAG land, the impact on surface water flood risk from the proposed development is deemed low.

During construction, the construction compound will be on existing impermeable land and therefore will not increase surface water flood risk. Additionally, during the progress of the works all existing gullies will be kept clean and free from obstruction. On completion of the whole works, gullies and drains shall be flushed from end to end with water and left free from obstructions, to prevent an increase in surface water flood risk.

4.2.3 Sewer Flooding

Sewer flooding occurs when there is a failure, collapse and/or blockage of the network, considered to be a residual risk, or due to insufficient capacity in the network. The probability of sewer flooding is dependent on the combined effect of several factors such as their condition, existing maintenance regimes and other outside influences. However, failure could potentially result in a release of large volumes of water.

4.2.3.1 Existing Risk

The SFRA does not refer to any historical instances of sewer flooding within the proposed development. Therefore, the risk of sewer flooding is considered to be low, although there is a residual risk of flooding due to the presence of a surface water sewer on Thorley Lane. However, given the surface water flood risk is low and that the nearest combined sewer system is located within Wythenshawe (approximately 700m north of the proposed development), the risk of sewer flooding is considered to be low.

4.2.3.2 With Scheme Risk

The proposed development is connecting into the existing drainage and, as stated in section 4.2.2.2, will have low impact on surface water flood risk. Given the very nature of the impermeable area of the proposed development already and that there is no pass forward flow to combined sewer systems, the risk of sewer flooding to the proposed development remains low.

4.2.4 Groundwater Flood Risk

Groundwater flooding occurs where water levels, beneath the ground, rise above the ground surface. In some instances, groundwater can emerge at surface level following heavy rainfall events and contribute to existing flooding from other sources. Alternatively, a greater risk can be presented if construction works or long-term, large-scale developments, such as road schemes, intersect areas with shallow groundwater levels or create pathways for deeper confined artesian pressures, which can be released at ground level and cause widespread flooding.

4.2.4.1 Existing Risk

The SFRA contains no records of groundwater flooding or evidence of groundwater flood risk within the area of the proposed development. In the event of groundwater flooding occurring, it would be anticipated to flow towards low lying areas, however the risk is considered low.

4.2.4.2 With Scheme Risk

The proposed development is not deepening or going lower than the current drainage infrastructure, so the risk of the works impacting groundwater flow paths and risk of flooding in the area is considered low.

4.2.5 Reservoir Failure

Reservoir flooding can occur as a result of the failure of artificially created ponds / lakes and is detailed in the NPPG to be residual risk. The failure of reservoirs could result in a large volume of water escaping and flooding land within its flow path.

4.2.5.1 Existing Risk

The EA's Risk of Flooding from Reservoirs map¹³ indicates that the proposed development is not located within an area at risk of reservoir flooding.

4.2.5.2 With Scheme Risk

It is unlikely that the proposed development will alter the risk of reservoir flooding. Given the distance of the proposed development to any reservoir flood extent, the impact of the proposed development on the risk of reservoir flooding is deemed negligible.

4.2.6 Risk of Flood Defence Failure

Flood defence failures, or breaches, occur when the structure of a flood defence fails and water flows through the defence as if the defence were not there.

4.2.6.1 Existing Risk

The site is not located within an area shown on the EA Reduction in Risk of Flooding from Rivers and Sea due to Defences¹⁴. Additionally, the EA AIMs Asset Database¹⁵ shows that Timperley Brook is culverted beneath the airport's runway approximately 200m south of the proposed development. However, the culvert is not in close proximity to the proposed development and based on the EA's Surface Water Flood Risk mapping¹⁶ flooding as a result of a culvert blockage is unlikely to encroach on the development. Therefore, the Risk of Flood Defence Failure to the proposed development is considered low.

4.2.6.2 With Scheme Risk

The proposed development will not impact any Flood Defences within the area. Therefore, the impact of the proposed development on the Risk of Flood Defence Failure is deemed negligible.

¹³ Environment Agency. (2023). *Risk of Flooding from Reservoirs*. Available from: <https://check-long-term-flood-risk.service.gov.uk/map> (Accessed 17/04/24)

¹⁴ Environment Agency. (2023). *Reduction in Risk of Flooding from Rivers and Sea due to Defences*. Available from: <https://www.data.gov.uk/dataset/dcdcf96b-3293-4987-8ca8-9b8827f5ccf8/reduction-in-risk-of-flooding-from-rivers-and-sea-due-to-defences> (Accessed 17/04/24)

¹⁵ Environment Agency. (2024). *Asset Management*. Available from: [Asset Information and Maintenance Programme \(data.gov.uk\)](https://data.gov.uk/dataset/asset-management) (Accessed 24/04/24)

¹⁶ Environment Agency. (2023). *Risk of Flooding from Surface Water*. Available from: <https://www.gov.uk/check-long-term-flood-risk> (Accessed 17/04/24)

5. Conclusion

5.1 Development Suitability

The proposed development is located within Flood Zone 1. Therefore, the proposed development is considered to pass the Sequential Test and as "less vulnerable", and is not required to pass the Exception Test. The proposed development is therefore considered suitable in accordance with NPPF and local policies.

5.2 Flood Risk to the development

All sources of flood risk to the site are low. The site is within Flood Zone 1 and there are small extents of low surface water flood risk within the proposed development boundary.

In the event there was flooding, the proposed drainage will ensure the new Sydney Avenue Link remains open and operational so that access to and from the location remains as existing.

5.3 Flood Risk Impact of the development

The proposed development is a 200m long section of new single lane carriageway, designed to replace the existing Sydney Avenue across an existing car park. As set out in section 4, with appropriate drainage design included within the proposed development no increase in flood risk elsewhere would be anticipated.

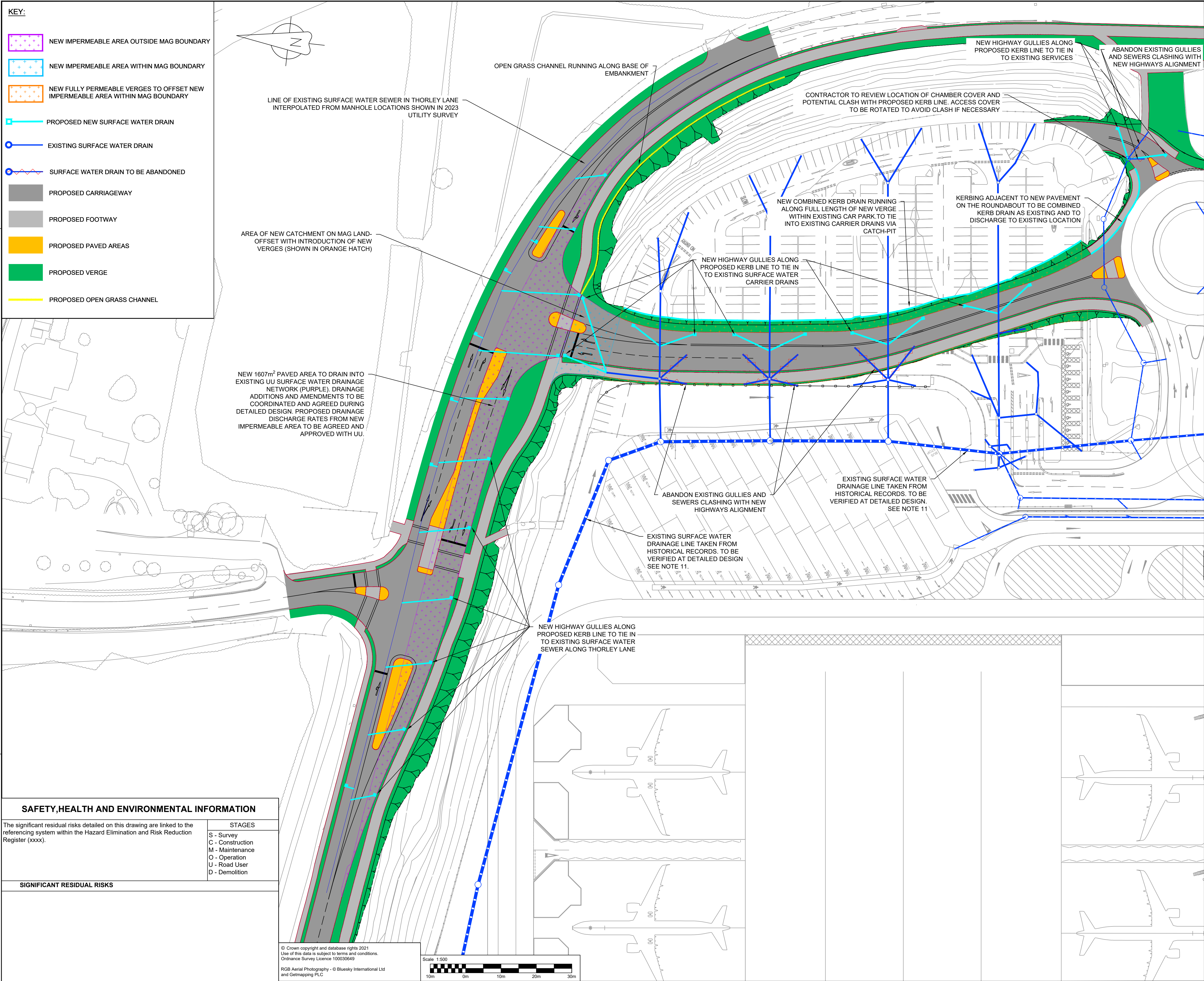
5.4 Planning Requirements

In accordance with NPPF guidance (and based on available information and flood risk data), this FRA demonstrates that the development will satisfy the following requirements.

- Remain operational and safe for users in times of flood;
- Result in no net loss of active floodplain storage; and
- Not impede water flows and not increase flood risk elsewhere.

Appendix A. Overview of Proposed Works

[MT2RSYDN-MAN.LG.00.RD-JAC-C-GA-STORM-0001.pdf](#)



NOTES

- SAFETY IS A PRIORITY. IF YOU HAVE ANY CONCERN ABOUT SAFETY IN THE CONSTRUCTION OR ULTIMATE USE OF THE WORKS DESCRIBED, PLEASE RAISE IT IMMEDIATELY WITH THE PROJECT MANAGER.
- DO NOT SCALE FROM THIS DRAWING.
- ALL DIMENSIONS TO BE CHECKED ON SITE.
- DEVELOPMENT OF THIS DRAWING SHALL REQUIRE THE CONTRACTOR TO CONFIRM WITH ALL THEIR SPECIALISTS AND INSTALLERS ALL ASPECTS OF THE WORKS COVERED BY THE CONTRACT.
- ALL DIMENSIONS ARE METRES UNLESS STATED OTHERWISE.
- ALL DRAWINGS TO BE PRINTED IN COLOUR.
- THE EXISTING BASE INFORMATION COMPRISES OF MERGED TOPOGRAPHICAL AND PLANNING INFORMATION RECEIVED FROM MAG. FURTHER VALIDATION AND EXTENSION OF THE TOPOGRAPHICAL SURVEY WILL BE REQUIRED BY THE CONTRACTOR AT FUTURE STAGES TO PROGRESS THE DESIGN.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE PERFORMANCE SPECIFICATION.
- THE CONTRACTOR IS TO UNDERTAKE A THOROUGH VISUAL INSPECTION OF ALL AREAS COVERED IN THE SCOPE OF WORKS TO DETERMINE THE INTEGRITY, STABILITY AND SUITABILITY OF EXISTING BUILDING ELEMENTS PRIOR TO PRICING THE WORKS. ANY DISCREPANCIES OR CONCERNS TO BE IMMEDIATELY HIGHLIGHTED TO THE PROJECT MANAGER.
- IRONWORKS OF RETAINED WET UTILITY ASSETS AFFECTED BY THE PP11 WORKS ARE TO BE ADJUSTED TO SUIT PROPOSED GROUND LEVELS.
- SOME OF THE NETWORKS SHOWN IN THIS DRAWING ARE CONCEPT DESIGN AND REQUIRE VERIFICATION. SHOULD SURVEYS FIND THE NETWORKS TO VARY FROM THOSE SHOWN, IT SHALL BE REPORTED IMMEDIATELY TO THE PROJECT MANAGER. EXISTING SERVICE LOCATIONS ARE BASED ON:
MAN000-BHE-D-0000-XXX-M3-864-000-101_Ver35
MT2RLAND-MAN-LG.00.ZO-JAC-Z-M2-LANDRD-0005
- GULLY POSITIONS SHOWN ON THIS DRAWING ARE INDICATIVE AND REQUIRE CONFIRMATION AS PART OF DETAILED DESIGN.
- ALL AREAS SHOWN AS PROPOSED VERGE ARE TO BE CONSTRUCTED AS FULLY PERMEABLE VEGETATED AREAS.

1.0	S4 - FOR STAGE APPROVAL	25/01/24
Rev	Details	Date

MAG Manchester Airport

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LEVEL C3 - CONFIDENTIAL

KEY PLAN (N.T.S)

Manchester Airport

Project Name
MAG LANDSIDE - FI, SA & VCC

Title
SURFACE WATER DRAINAGE
SYDNEY AVENUE

Discipline	Project Phase		
Civil Engineering	Design - Phase 3 - GW 2		
Drawing Originator	Originator's Job No.		
JACOBS	MAG42040		
Drawn By	Drawn Date	Checked By	Checked Date
JB	25/01/24	JC	25/01/24
Approved By	Approved Date	Scale and sheet size	
NL	25/01/24	@ A1	

Manchester Airport Grid Reference
APX = 11864, APY = 12235

Project Number	Location Code	Origin			
MT2RSYDN	MAN.LG.00.RD	JAC			
Disc.	Doc. Type	ACC	Unique ID Number	Status	Rev.
C	GA	STORM	0001	S4	1.0

Appendix B. Planning application boundary vs the project boundary (proposed development)

