

Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Low threshold property</li><li>- Ingress through front of property and bricks</li><li>- Bow waves into the property</li><li>- Gullies maintained and additional drains installed prior to the event – however, limited effectiveness in this event</li><li>- Currently no Property Flood Resilience available</li></ul>	<ul style="list-style-type: none"><li>- Surface water flow paths</li><li>- Low threshold</li></ul>	<ul style="list-style-type: none"><li>- Homeowners to explore Property Flood Resilience and BBC to support where possible</li></ul>

**Legend**

- Location of Flooding Risk of Flooding from Surface Water
- Direction of Flow from Surface Water
- LiDAR
- Environment Agency Flood Zones
- Risk of Flooding From Surface Water
- Annotations
- Combined Layers

**Low risk of flooding (0.1% AEP)**

**Medium risk of flooding (1% AEP)**

**High risk of flooding (3.3% AEP)**

**BEDFORD**  
BOROUGH COUNCIL

Job Title

Bedford Section 19 Reports - 20th October 2022 Event

Drawing Title

MK44 1PE

N

0 12.5 25 50 m

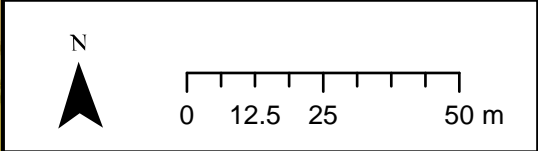
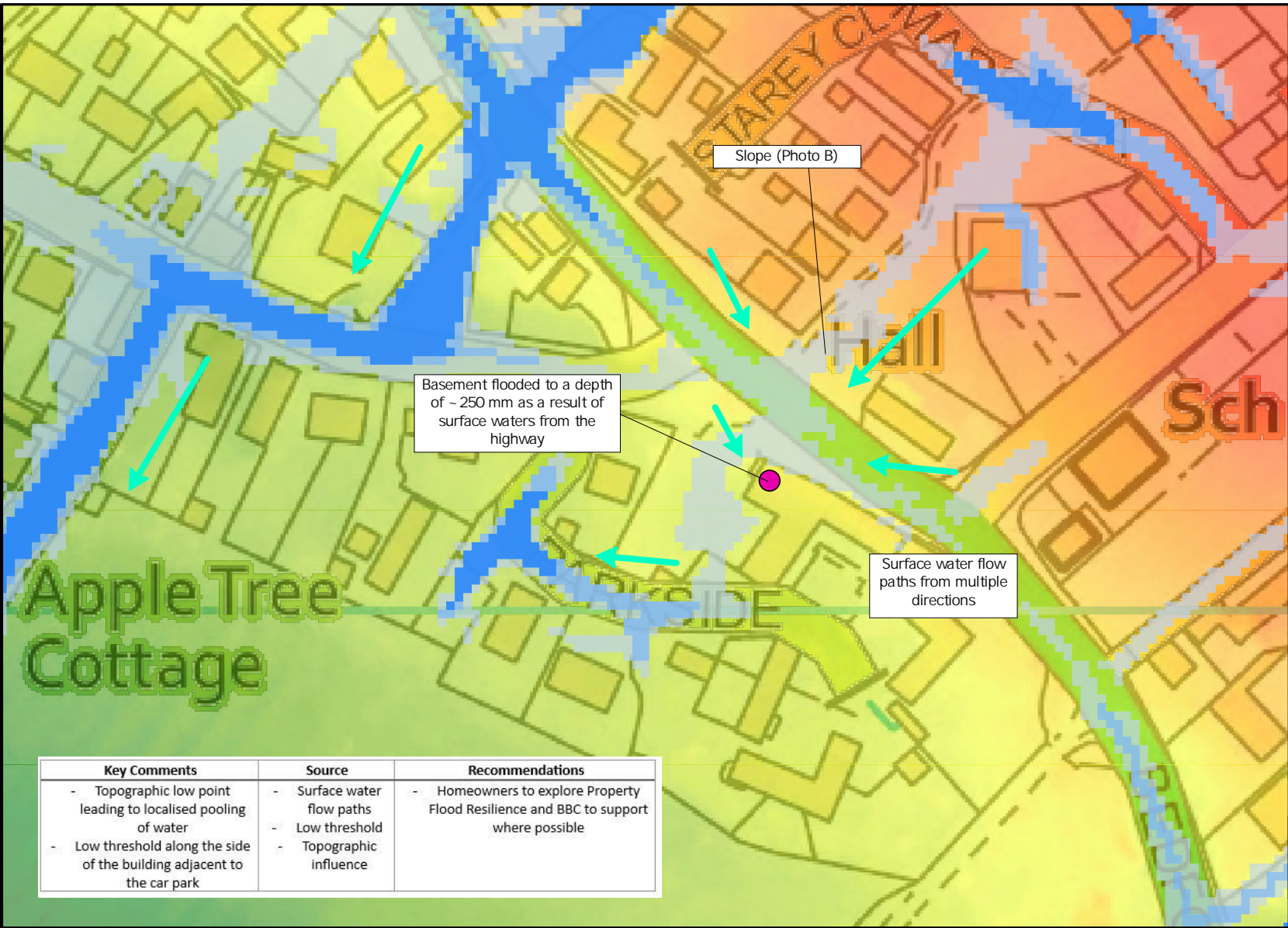
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Address

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100 Embankment  
Cathedral Approach  
Manchester  
M3 7FB

Drawn	T. Mair	Date	12/09/2024
Checked	H. Wells	Date	12/09/2024
Approved	J. Ball	Date	12/09/2024



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**Legend**

● Location of Flooding Risk of Flooding from Surface Water

→ Direction of Flow from Surface Water

Elevation (mAOD)

52  
41  
41

Low risk of flooding (0.1% AEP)  
Medium risk of flooding (1% AEP)  
High risk of flooding (3.3% AEP)

LiDAR

Environment Agency Flood Zones

Risk of Flooding From Surface Water

Direction of Flow

Annotations

Combined Layers

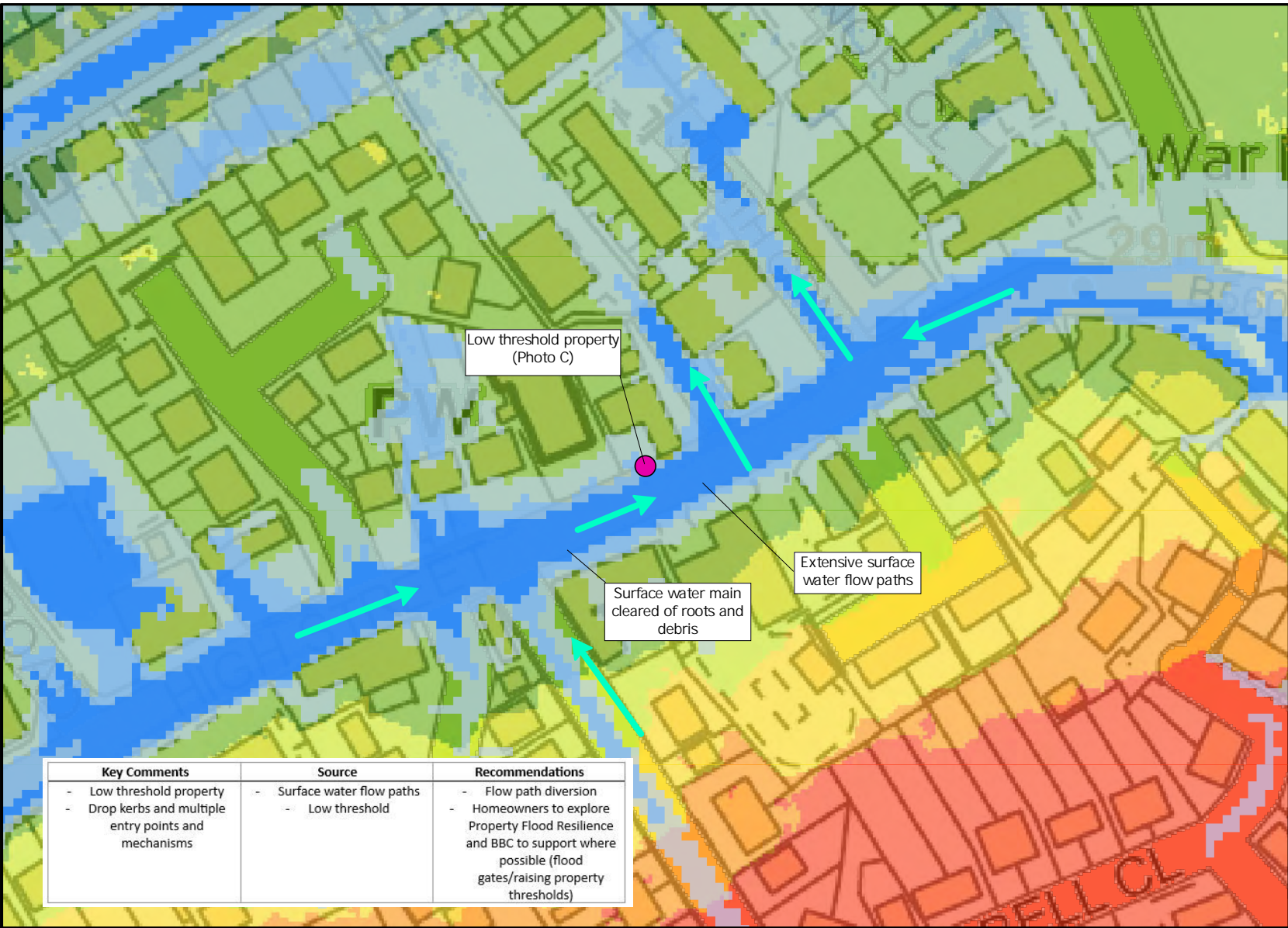
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T. Mair	12/09/2024

Checked	Date
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Approved	Date
J. Ball	12/09/2024



Low threshold property  
(Photo C)

Extensive surface  
water flow paths

Surface water main  
cleared of roots and  
debris

Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Low threshold property</li><li>- Drop kerbs and multiple entry points and mechanisms</li></ul>	<ul style="list-style-type: none"><li>- Surface water flow paths</li><li>- Low threshold</li></ul>	<ul style="list-style-type: none"><li>- Flow path diversion</li><li>- Homeowners to explore Property Flood Resilience and BBC to support where possible (flood gates/raising property thresholds)</li></ul>

**Legend**  
● Location of Flooding  
→ Direction of Flow  
Elevation (m AOD)  
35  
28  
28

**Risk of Flooding from Surface Water**  
Low risk of flooding (0.1% AEP)  
Medium risk of flooding (1% AEP)  
High risk of flooding (3.3% AEP)

LiDAR

Risk of Flooding From Surface Water

Annotations

Environment Agency Flood Zones

Direction of Flow

Combined Layers

Job Title

Bedford Section 19 Reports - 20th October 2022 Event

Drawing Title

MK22 7AL

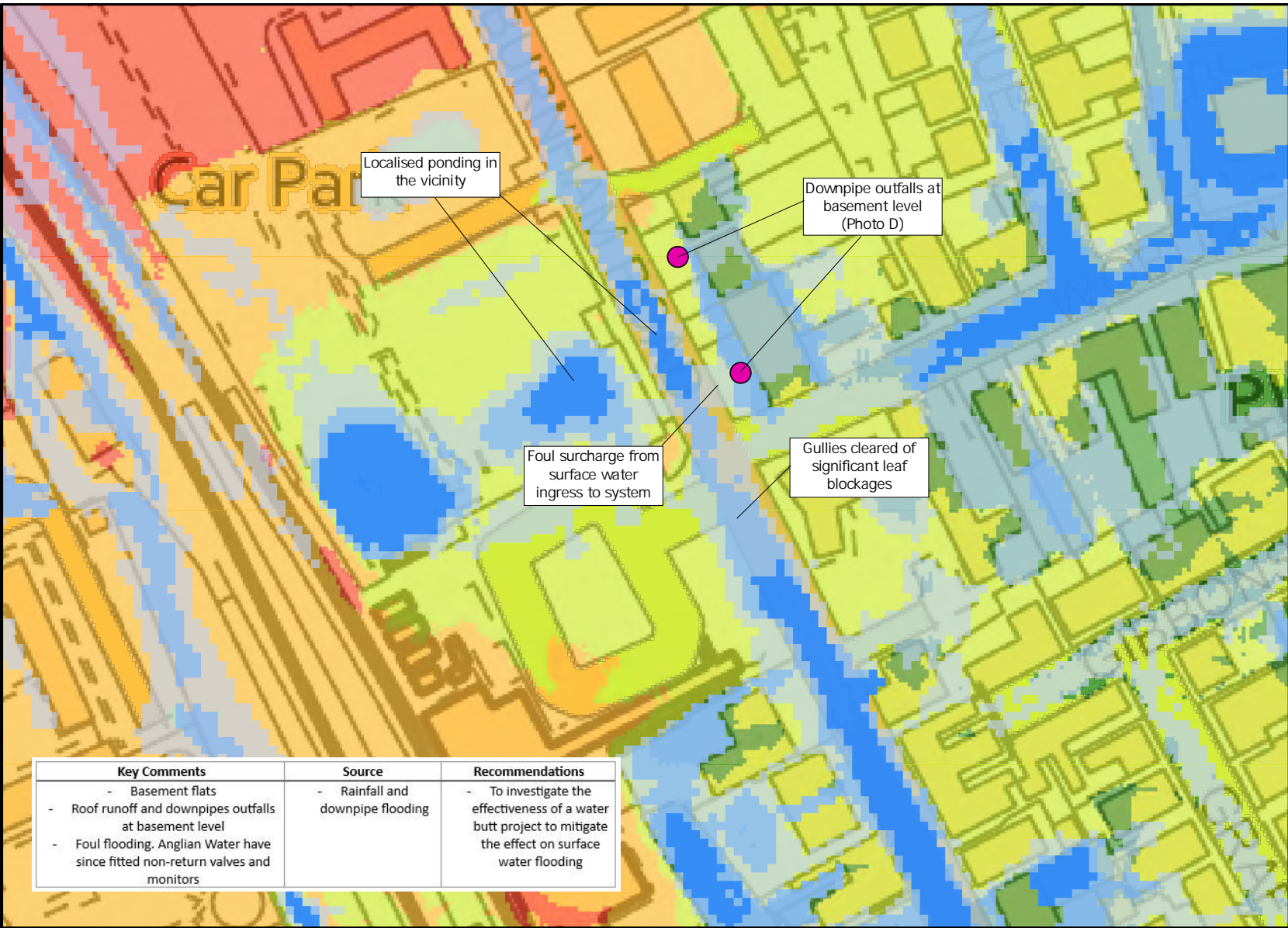
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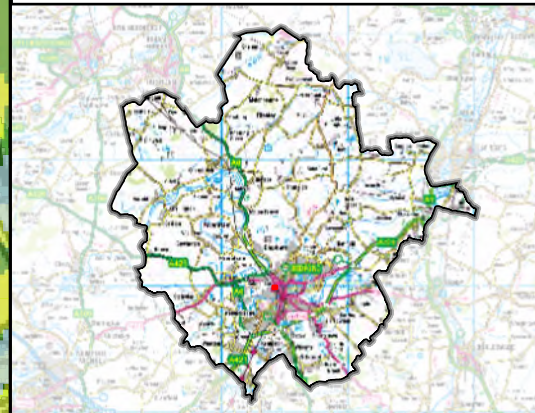
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Approved	J. Ball	Date	12/09/2024



BEDFORD  
BOROUGH COUNCIL

Job Title

Bedford Section 19 Reports - 20th  
October 2022 Event



Drawing Title

MK40 1EA



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## Legend

● Location of Flooding Risk of Flooding from Surface Water

● Location of Flooding Risk of Flooding from Surface Water

Flood Map for Planning

Elevation (mAOD)

31  
Flood Zone 1  
Low risk of flooding (0.1% AEP)

29  
Flood Zone 2  
Medium risk of flooding (1% AEP)

27  
Flood Zone 3  
High risk of flooding (3.3% AEP)

26  
Flood Zone 4  
High risk of flooding (3.3% AEP)

LiDAR

Environment Agency Flood  
Zones

Risk of Flooding From  
Surface Water

Direction of Flow

Annotations

Combined Layers

**AECOM**

Address

AECOM  
100 Embankment  
Cathedral Approach  
Manchester  
M3 7FB

Drawn

T. Mair

Date

12/09/2024

Checked

H. Wells

Date

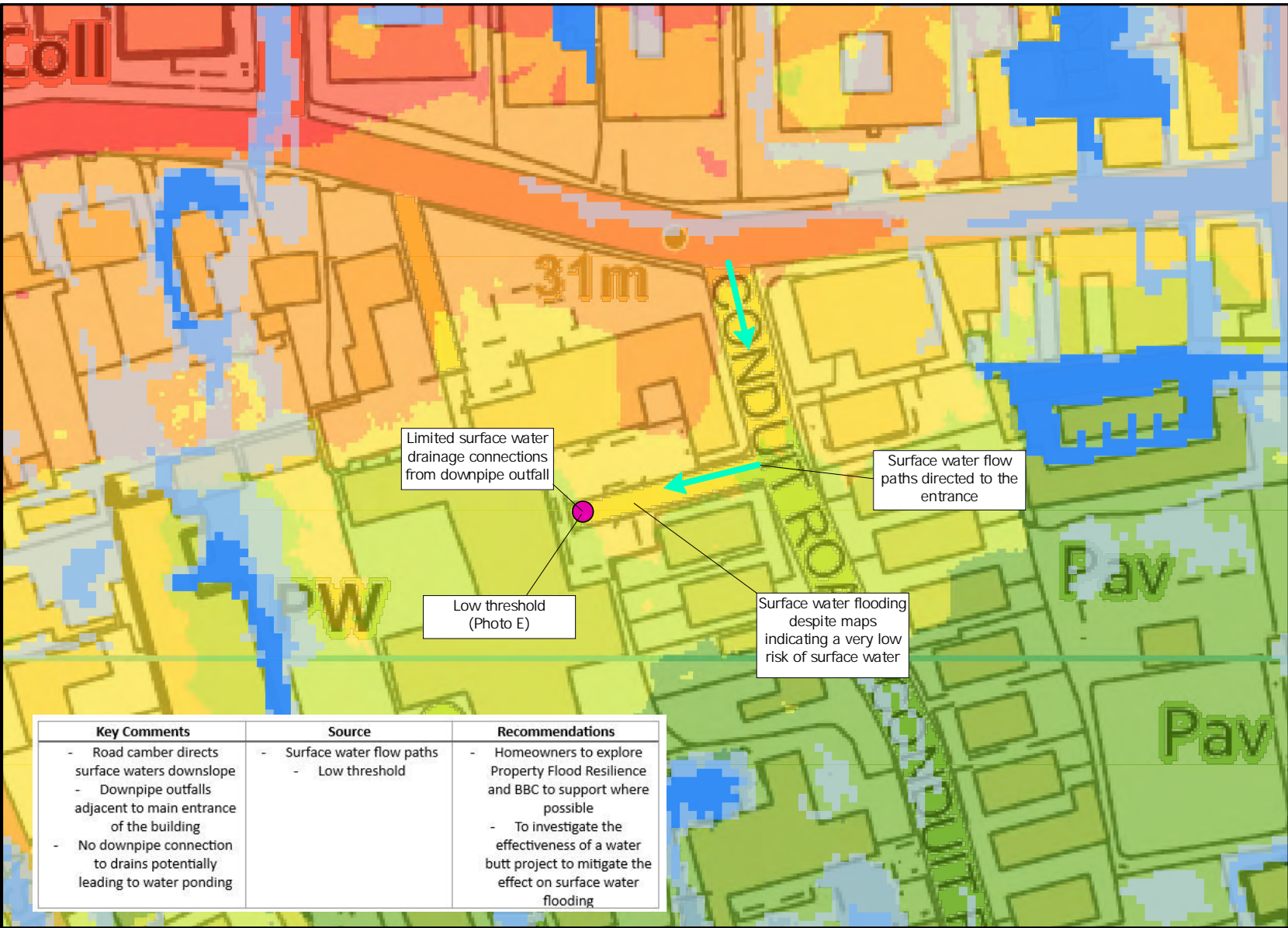
12/09/2024

Approved

J. Ball

Date

12/09/2024



Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Road camber directs surface waters downslope</li><li>- Downpipe outfalls adjacent to main entrance of the building</li><li>- No downpipe connection to drains potentially leading to water ponding</li></ul>	<ul style="list-style-type: none"><li>- Surface water flow paths</li><li>- Low threshold</li></ul>	<ul style="list-style-type: none"><li>- Homeowners to explore Property Flood Resilience and BBC to support where possible</li><li>- To investigate the effectiveness of a water butt project to mitigate the effect on surface water flooding</li></ul>

**Legend**  
● Location of Flooding Risk of Flooding from Surface Water  
→ Direction of Flow from Surface Water  
Elevation Map from LiDAR  
Elevation (mAOD)  
32  
27  
27  
27

**Risk of Flooding from Surface Water**  
Low risk of flooding (0.1% AEP)  
Medium risk of flooding (1% AEP)  
High risk of flooding (3.3% AEP)  
Flood Zone 1  
Flood Zone 2  
Flood Zone 3  
Flood Zone 4

LiDAR

Environment Agency Flood Zones

Risk of Flooding From Surface Water

Direction of Flow

Annotations

Combined Layers

**BEDFORD BOROUGH COUNCIL**

Job Title  
Bedford Section 19 Reports - 20th October 2022 Event

Drawing Title  
MK40 1FB

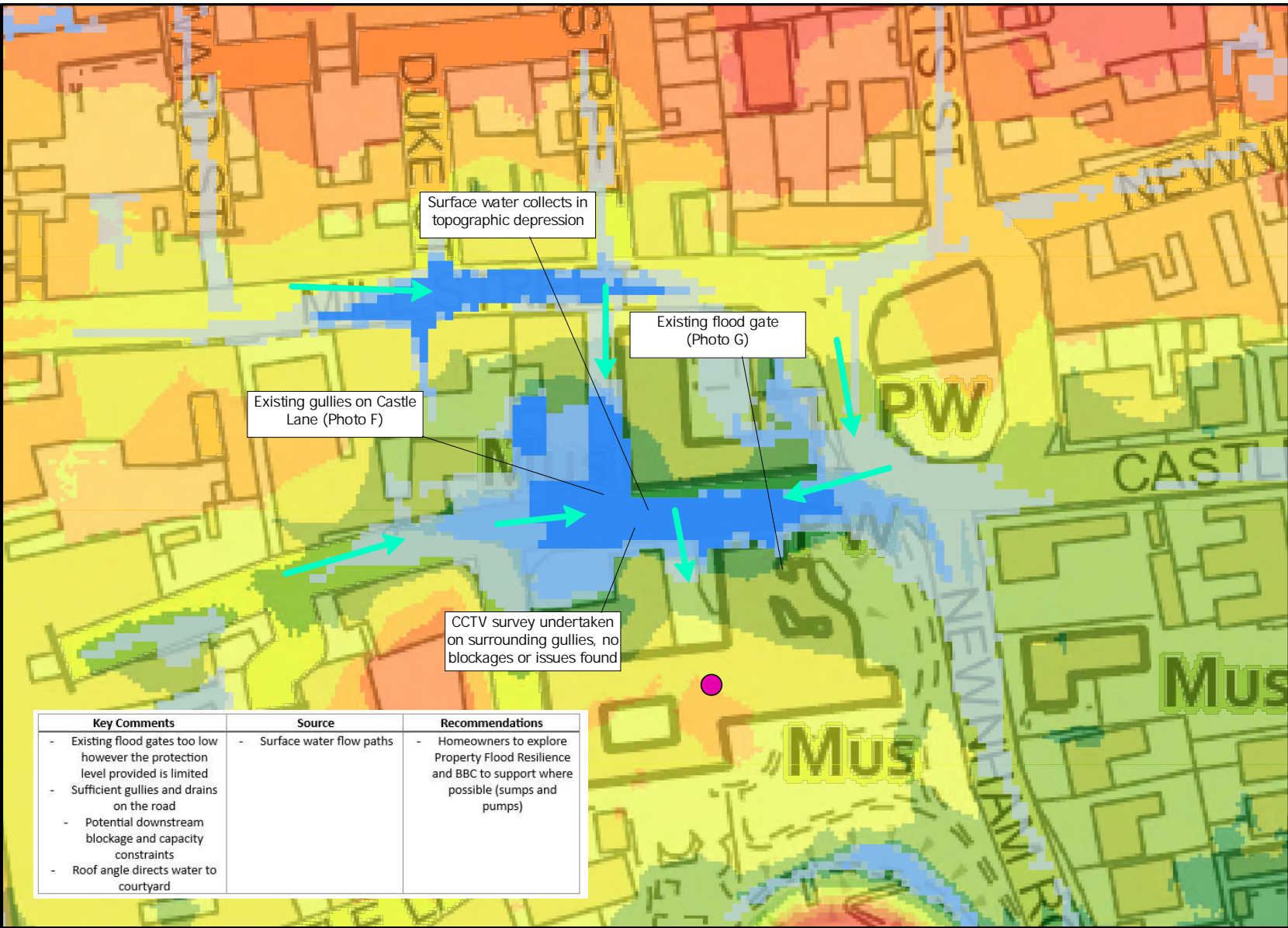
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Drawn T. Mair	Date 12/09/2024
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Approved J. Ball	Date 12/09/2024



Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Existing flood gates too low however the protection level provided is limited</li><li>- Sufficient gullies and drains on the road</li><li>- Potential downstream blockage and capacity constraints</li><li>- Roof angle directs water to courtyard</li></ul>	<ul style="list-style-type: none"><li>- Surface water flow paths</li></ul>	<ul style="list-style-type: none"><li>- Homeowners to explore Property Flood Resilience and BBC to support where possible (sumps and pumps)</li></ul>

**Legend**  
● Location of Flooding  
➡ Direction of Flow  
Elevation Map  
Elevation (mAOD)  
33  
30  
26  
24

**Risk of Flooding from Surface Water**  
Low risk of flooding (0.1% AEP)  
Medium risk of flooding (1% AEP)  
High risk of flooding (3.3% AEP)

LiDAR

Environment Agency Flood Zones

Risk of Flooding From Surface Water

Direction of Flow

Annotations

Combined Layers

**BEDFORD**  
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Job Title

Bedford Section 19 Reports - 20th  
October 2022 Event

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Approved	J. Ball	Date	12/09/2024



BEDFORD  
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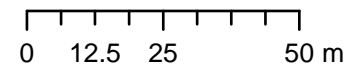
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Drawing Title

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Approved	J. Ball	Date	12/09/2024

Surface water flow paths  
from all directions

Cars parked along the road  
(Photo I)

~ 300 mm of water in the  
property

Threshold and downpipe  
(Photo H)

Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- No property threshold</li><li>- Slight topographic influence</li><li>- Downpipe outfalls to a drain next to the front door</li></ul>	<ul style="list-style-type: none"><li>- Low threshold</li><li>- Rainfall and downpipe flooding</li></ul>	<ul style="list-style-type: none"><li>- Homeowners to explore Property Flood Resilience and BBC to support where possible (flood gates)</li></ul>

## Legend

● Location of Flooding

→ Direction of Flow from Surface Water

■ Risk of Flooding from Surface Water

Elevation (mAOD)

Flood Zone 1

Flood Zone 2

Flood Zone 3

High risk of flooding (3.3% AEP)

Low risk of flooding (0.1% AEP)

Medium risk of flooding (1% AEP)

High risk of flooding (3.3% AEP)

LiDAR

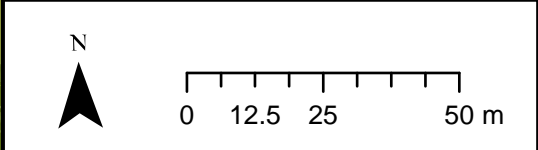
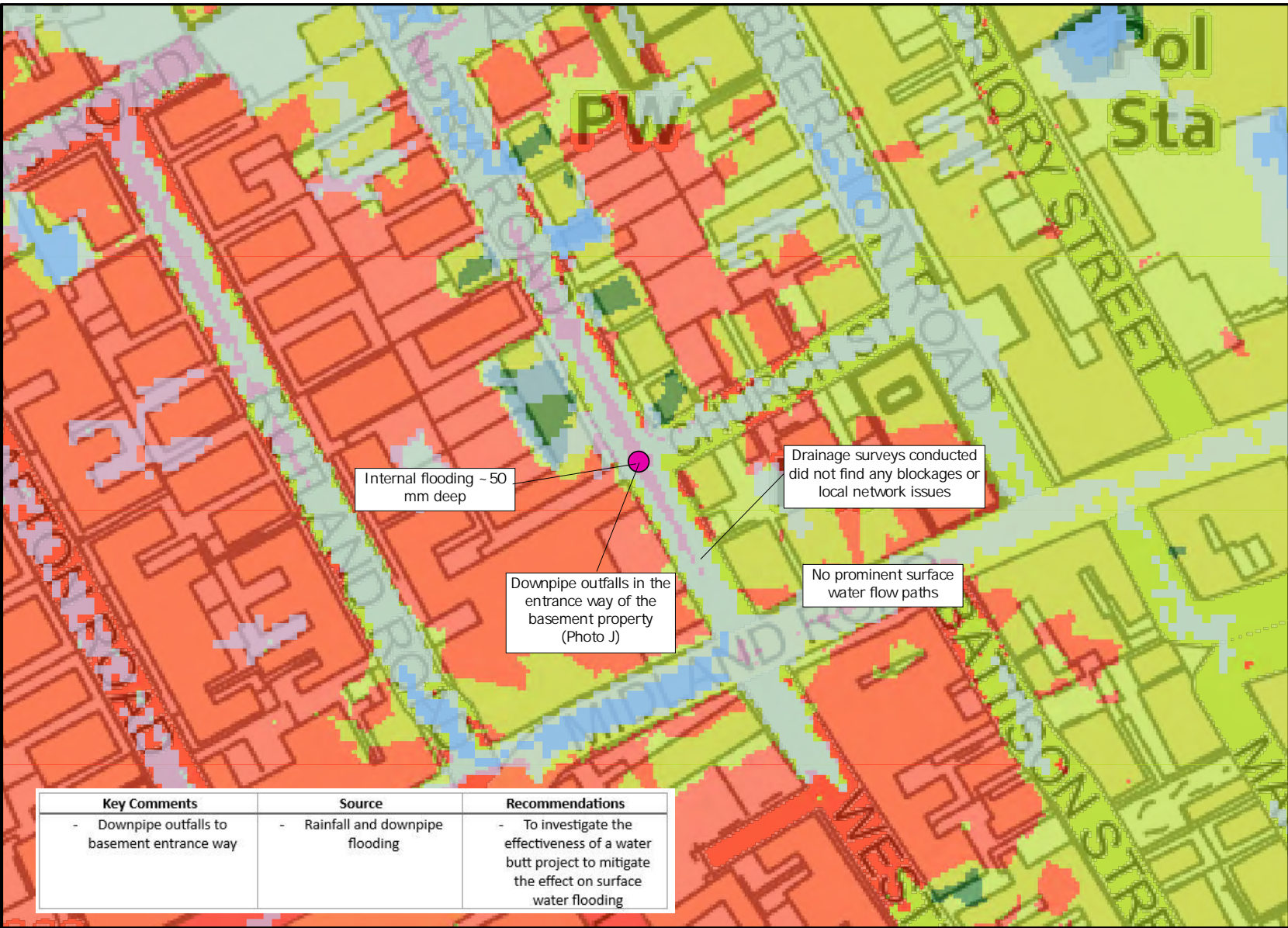
Environment Agency Flood Zones

Risk of Flooding From Surface Water

Direction of Flow

Annotations

Combined Layers



**Legend**

● Location of Flooding Risk of Flooding from Surface Water

● Direction of Flow from Surface Water

Elevation (mAOD)

28  
27  
26  
25  
24

Low risk of flooding (0.1% AEP)

Medium risk of flooding (1% AEP)

High risk of flooding (3.3% AEP)

LiDAR

Environment Agency Flood Zones

Risk of Flooding From Surface Water

Direction of Flow

Annotations

Combined Layers

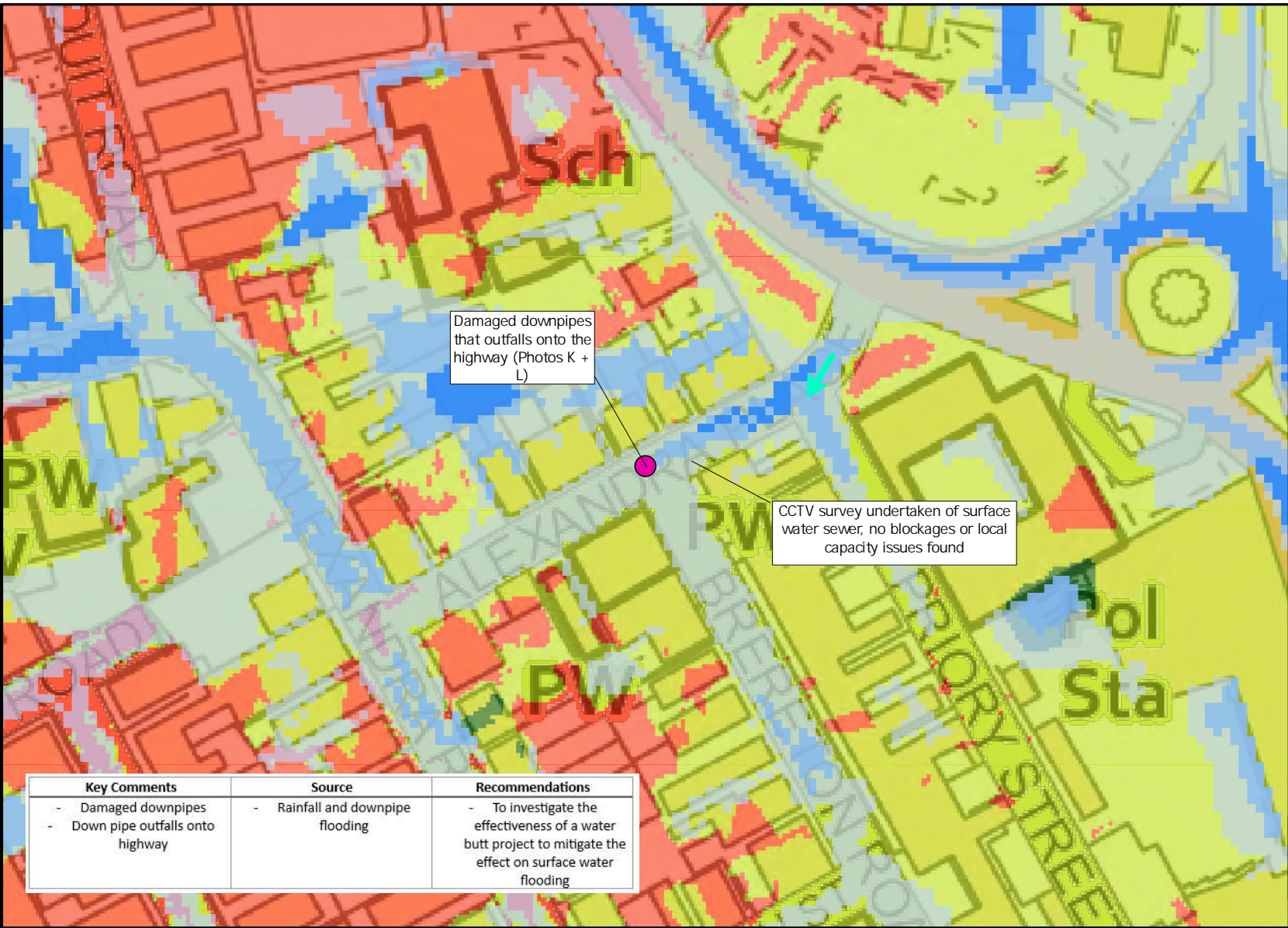
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Address  
AECOM  
100 Embankment  
Cathedral Approach  
Manchester  
M3 7FB

Drawn	Date
T. Mair	12/09/2024

Checked	Date
H. Wells	12/09/2024

Approved	Date
J. Ball	12/09/2024



Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Damaged downpipes</li><li>- Down pipe outfalls onto highway</li></ul>	<ul style="list-style-type: none"><li>- Rainfall and downpipe flooding</li></ul>	<ul style="list-style-type: none"><li>- To investigate the effectiveness of a water butt project to mitigate the effect on surface water flooding</li></ul>

**Legend**  
● Location of Flooding  
➡ Direction of Flow  
Elevation Map from LiDAR  
Elevation (mAOD)  
28  
26  
26

**Risk of Flooding from Surface Water**  
Low risk of flooding (0.1% AEP)  
Medium risk of flooding (1% AEP)  
High risk of flooding (3.3% AEP)

LiDAR

Risk of Flooding From Surface Water

Annotations

Environment Agency Flood Zones

Direction of Flow

Combined Layers

**BEDFORD**  
BOROUGH COUNCIL

Job Title  
Bedford Section 19 Reports - 20th  
October 2022 Event

Drawing Title  
MK40 1HT

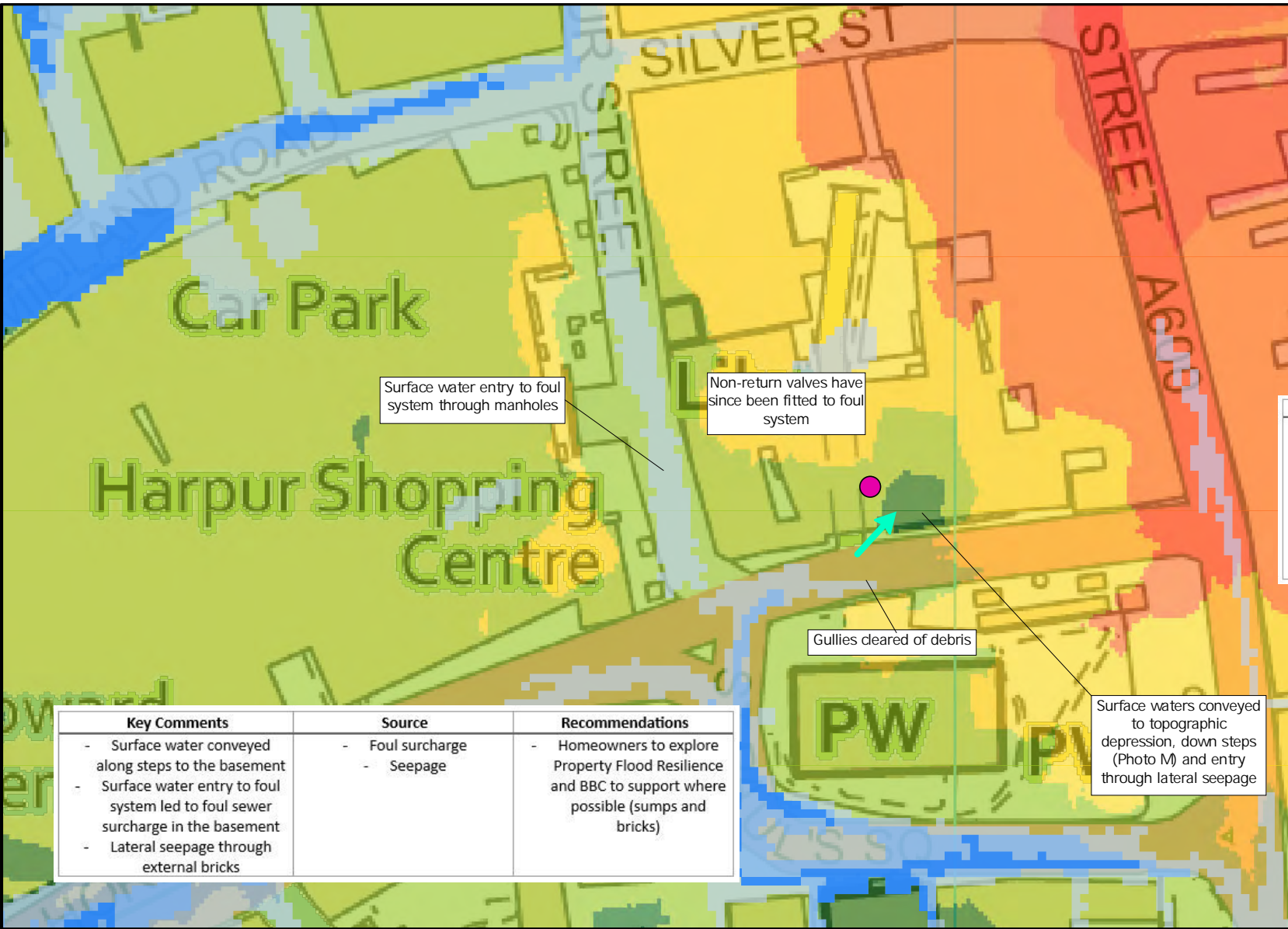
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Manchester  
M3 7FB

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Checked	H. Wells	Date	12/09/2024
Approved	J. Ball	Date	12/09/2024



Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Surface water conveyed along steps to the basement</li><li>- Surface water entry to foul system led to foul sewer surcharge in the basement</li><li>- Lateral seepage through external bricks</li></ul>	<ul style="list-style-type: none"><li>- Foul surcharge</li><li>- Seepage</li></ul>	<ul style="list-style-type: none"><li>- Homeowners to explore Property Flood Resilience and BBC to support where possible (sumps and bricks)</li></ul>

**Legend**  
● Location of Flooding  
● Risk of Flooding from Surface Water  
● Direction of Flow  
Elevation (mAOD)  
30  
26  
26

**Risk of Flooding from Surface Water**  
Low risk of flooding (0.1% AEP)  
Medium risk of flooding (1% AEP)  
High risk of flooding (3.3% AEP)

LiDAR

Risk of Flooding From Surface Water

Annotations

Environment Agency Flood Zones

Direction of Flow

Combined Layers

**BEDFORD**  
BOROUGH COUNCIL

Job Title

Bedford Section 19 Reports - 20th  
October 2022 Event

Drawing Title

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Approved	J. Ball	Date	12/09/2024



BEDFORD  
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Job Title

Bedford Section 19 Reports - 20th  
October 2022 Event



Drawing Title

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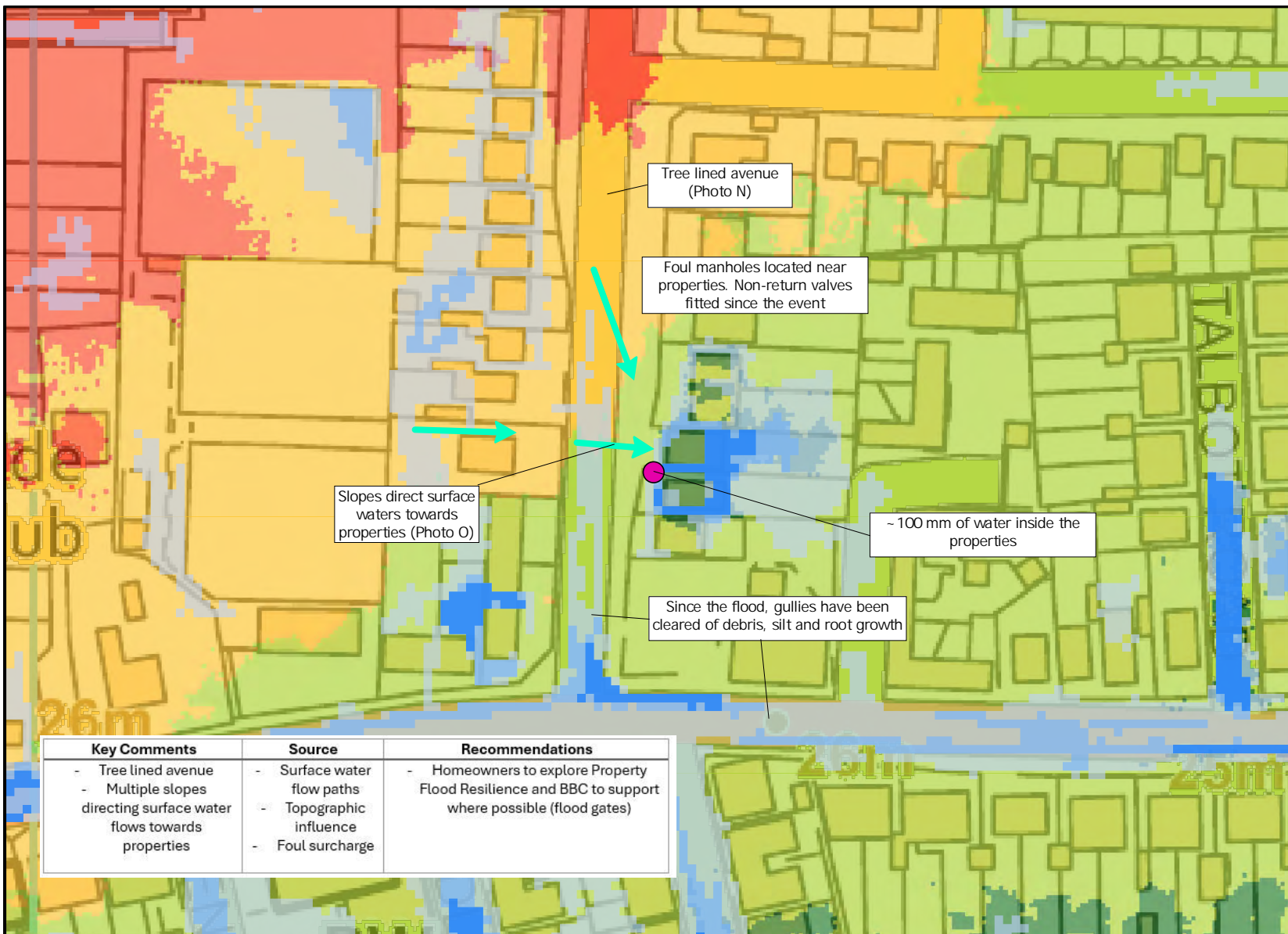
**AECOM**

Address  
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Manchester  
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Drawn  
T. Mair  
Date  
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H. Wells  
Date  
12/09/2024

Approved  
J. Ball  
Date  
12/09/2024



Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Tree lined avenue</li><li>- Multiple slopes directing surface water flows towards properties</li></ul>	<ul style="list-style-type: none"><li>- Surface water flow paths</li><li>- Topographic influence</li><li>- Foul surcharge</li></ul>	<ul style="list-style-type: none"><li>- Homeowners to explore Property Flood Resilience and BBC to support where possible (flood gates)</li></ul>

## Legend

● Location of Flooding Risk of Flooding from Surface Water

→ Direction of Flow from Surface Water

Elevation Map from LiDAR

Elevation (mAOD)

Low risk of flooding (0.1% AEP)

Medium risk of flooding (1% AEP)

Medium risk of flooding (1% AEP)

High risk of flooding (3.3% AEP)

High risk of flooding (3.3% AEP)

LiDAR

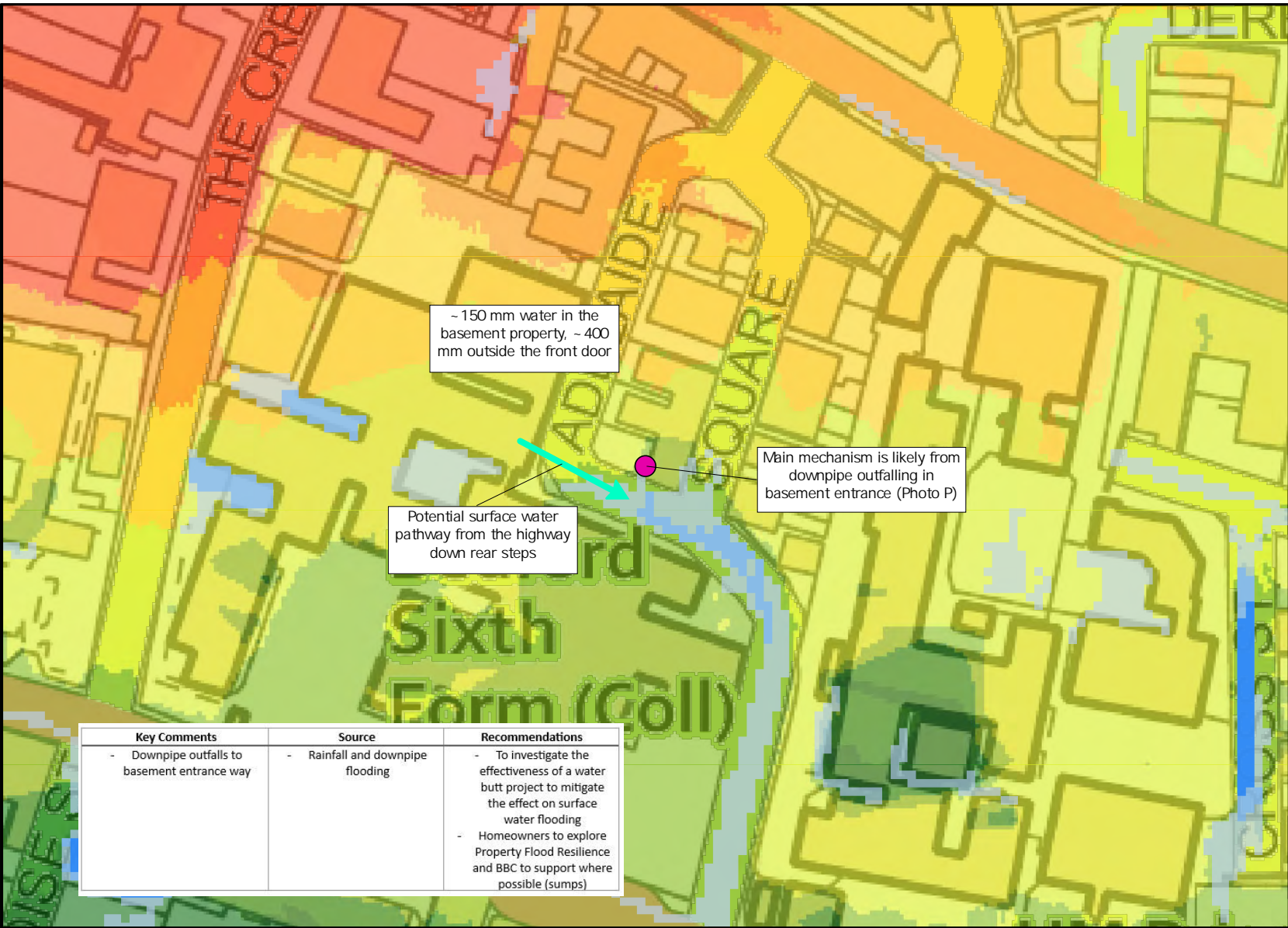
Environment Agency Flood  
Zones

Risk of Flooding From  
Surface Water

Direction of Flow

Annotations

Combined Layers



Key Comments	Source	Recommendations
- Downpipe outfalls to basement entrance way	- Rainfall and downpipe flooding	- To investigate the effectiveness of a water butt project to mitigate the effect on surface water flooding - Homeowners to explore Property Flood Resilience and BBC to support where possible (sumps)

### Legend

- Location of Flooding Risk of Flooding from Surface Water
- Direction of Flow from Surface Water
- Elevation Map (m AOD)
- 35  
28  
28
- Low risk of flooding (0.1% AEP)
- Medium risk of flooding (1% AEP)
- High risk of flooding (3.3% AEP)

LiDAR	Environment Agency Flood Zones
Risk of Flooding From Surface Water	Direction of Flow
Annotations	Combined Layers



BEDFORD  
BOROUGH COUNCIL

Job Title

Bedford Section 19 Reports - 20th  
October 2022 Event



Drawing Title

MK40 2RW



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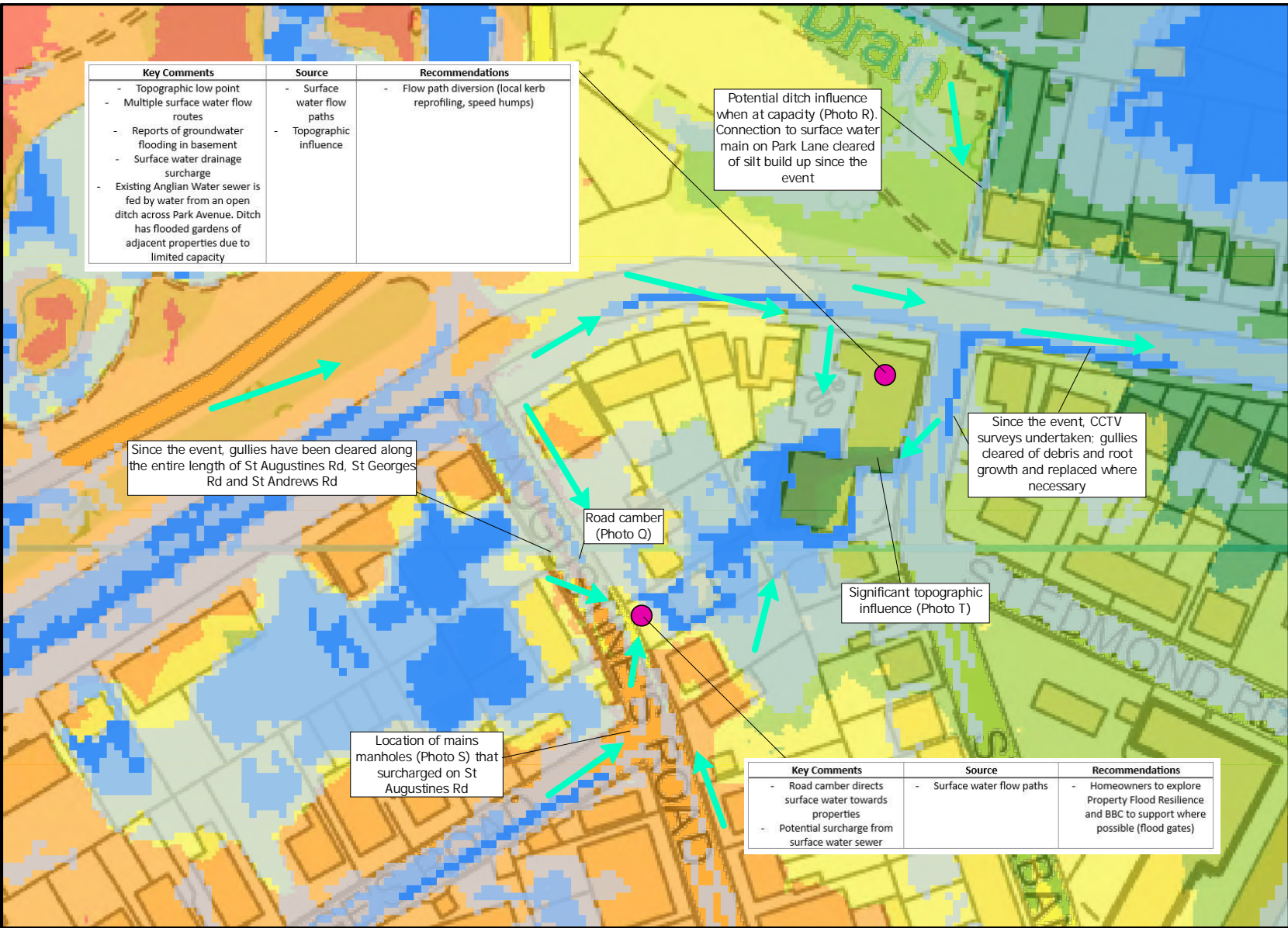
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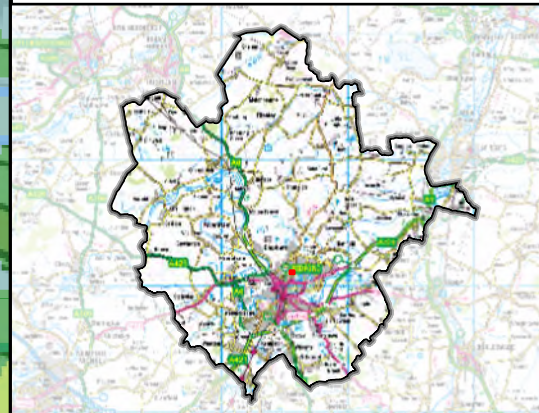
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Approved	J. Ball	Date	12/09/2024



BEDFORD  
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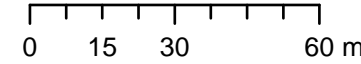
Job Title

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Drawing Title

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## Legend

- Location of Flooding Risk of Flooding from Surface Water
- Direction of Flow from Surface Water
- Flood Risk from Surface Water
- Low risk of flooding (0.1% AEP)
- Medium risk of flooding (1% AEP)
- High risk of flooding (3.3% AEP)

LiDAR

Environment Agency Flood  
Zones

Risk of Flooding From  
Surface Water

Direction of Flow

Annotations

Combined Layers

**AECOM**

Address

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M3 7FB

Drawn

T. Mair

Date

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H. Wells

Date

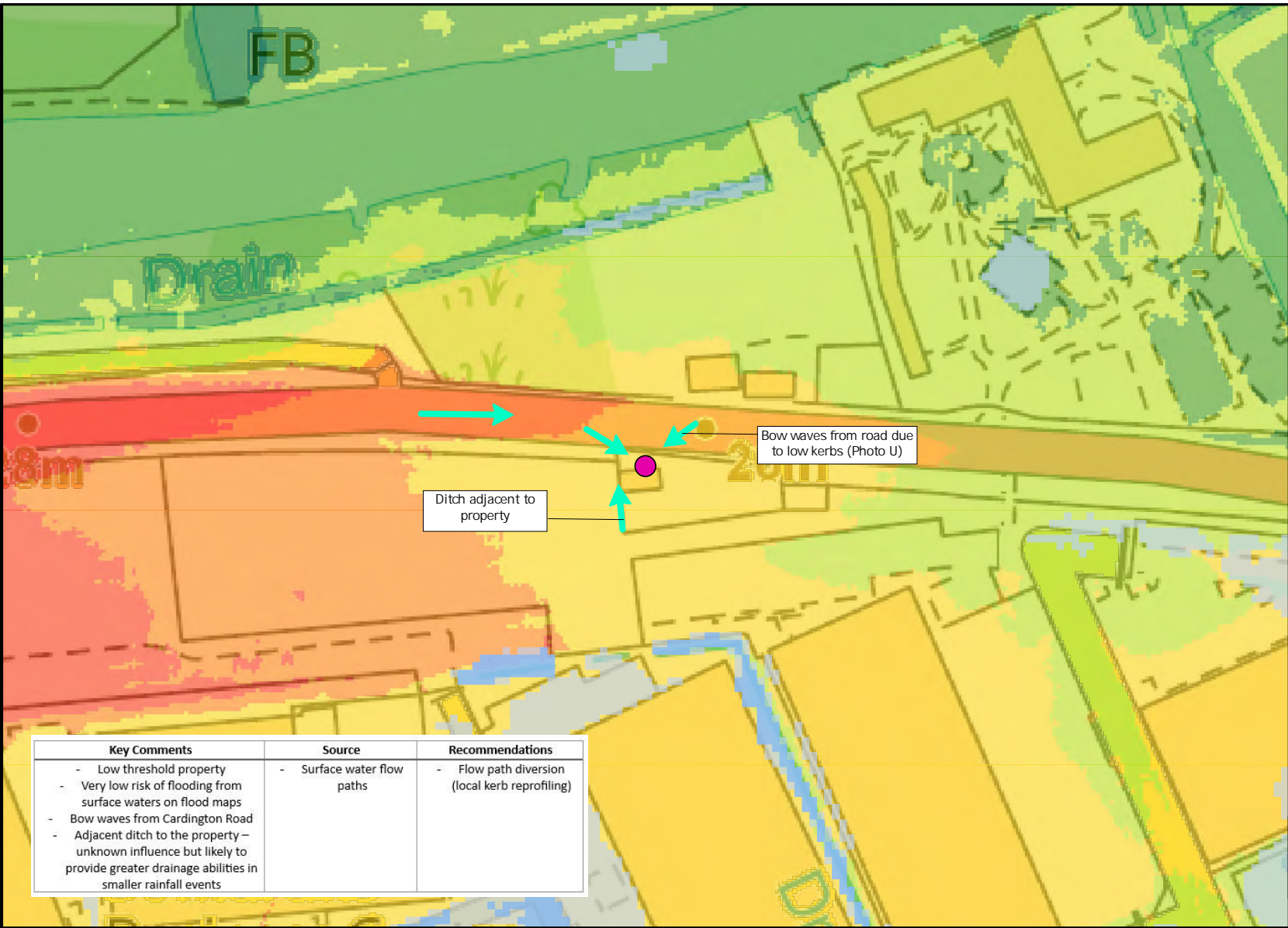
12/09/2024

Approved

J. Ball

Date

12/09/2024



Key Comments	Source	Recommendations
<ul style="list-style-type: none"><li>- Low threshold property</li><li>- Very low risk of flooding from surface waters on flood maps</li><li>- Bow waves from Cardington Road</li><li>- Adjacent ditch to the property – unknown influence but likely to provide greater drainage abilities in smaller rainfall events</li></ul>	<ul style="list-style-type: none"><li>- Surface water flow paths</li></ul>	<ul style="list-style-type: none"><li>- Flow path diversion (local kerb reprofiling)</li></ul>

**Legend**

Location of Flooding

Risk of Flooding from Surface Water

Direction of Flow

Elevation from Ordnance Survey

Elevation (mAOD)

Flood Zone 1

Flood Zone 2

Medium risk of flooding (1% AEP)

High risk of flooding (3.3% AEP)

28

22

Low risk of flooding (0.1% AEP)

Medium risk of flooding (1% AEP)

High risk of flooding (3.3% AEP)

LiDAR

Environment Agency Flood Zones

Risk of Flooding From Surface Water

Direction of Flow

Annotations

Combined Layers

Job Title

Bedford Section 19 Reports - 20th October 2022 Event

Drawing Title

MK44 3SA

N

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60 m

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