

APPENDIX F: HYDRAULIC MODELLING ADDITIONAL RESULTS (ABL, 2025)

NEW MODEL RESULTS (2026)

Aquafor reviewed the Existing Conditions model and the preferred Alternative 7, incorporating the 2023 Valdor flow data as well as applicable comments received from TRCA and the City. This model scenarios were updated in March 2026, superseding the previous November 2025 submission.



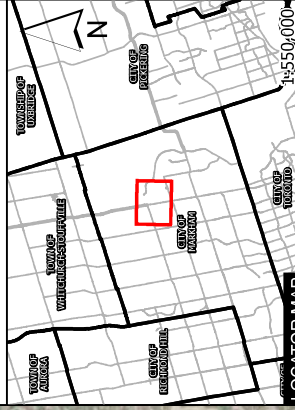
- Culverts
- Flow Stations
- River
- Rail Corridor

Regional Water Surface Elevation(m):

- <= 201
- 201 - 205.5
- 205.5 - 209.5
- 209.5 - 213.5
- > 213.5

Culverts:

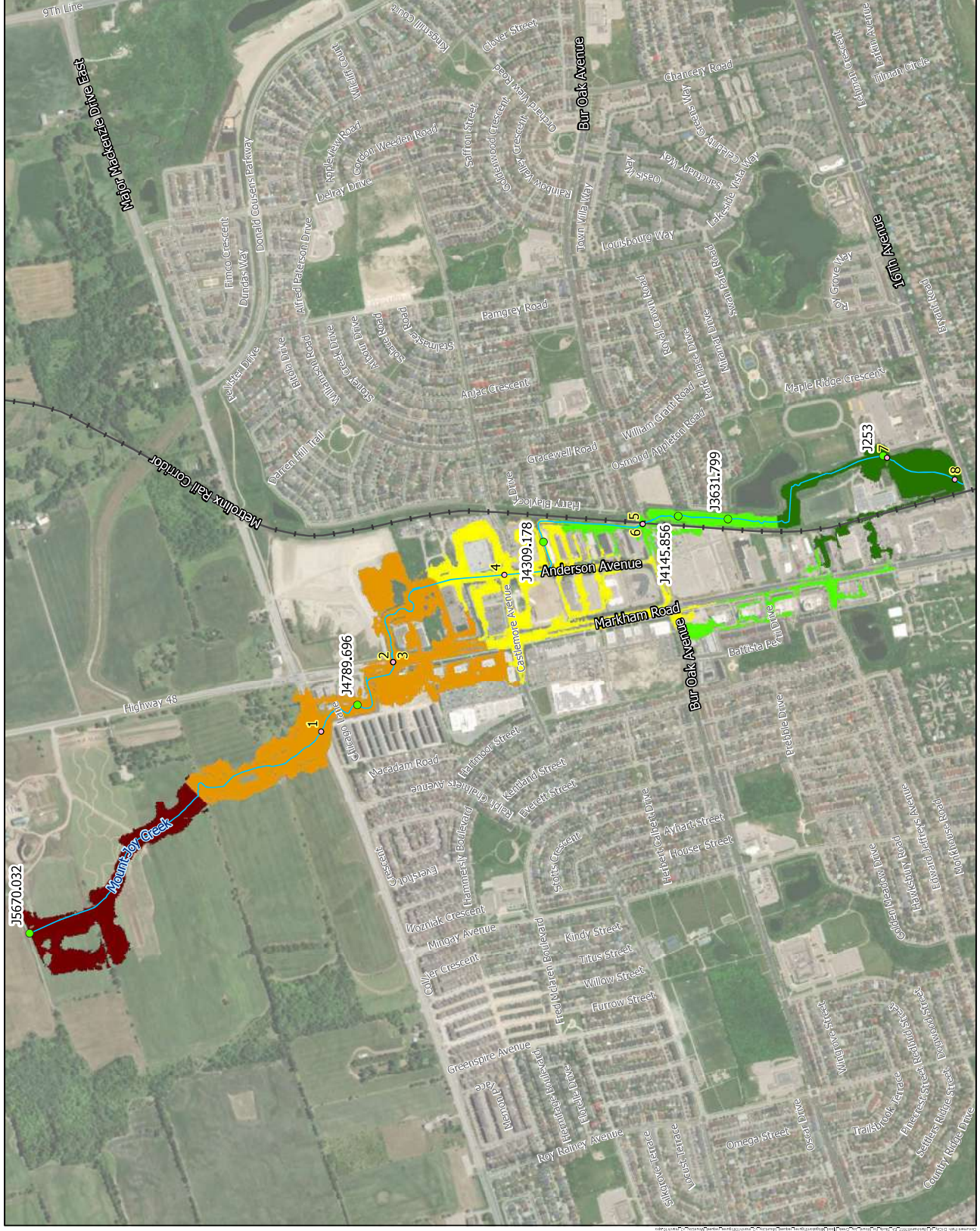
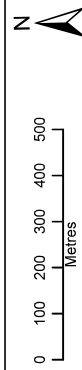
ID	MUD	Chainage
1	MajorMac_Culv_rou_704	1103.05
2	Markham_Road_Culv_1_rou_705	1487.13
3	Markham_Road_Culv_2_rou_705	1487.13
4	Anderson_Culv_rou_706	2046.23
5	BurOak_Culv_1_rou_664	2621.42
6	BurOak_Culv_2_rou_664	2621.42
7	PrivateDriveWay_Culv_rou_662	3456.63
8	SWM Pond_Culv_rou_669	3666.67



Figure

Regional Water Surface Elevation Map
(ABL Existing conditions model)

Date: 3/10/2026
Project: UTM Zone 17N
Data Source: City of Markham, Eschul.ca
Created by: V.A.

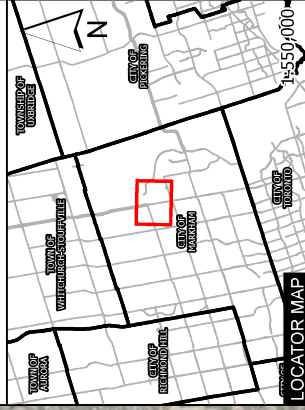




- Flow Stations
- Culverts
- River
- Rail Corridor

Flood Velocity (m/s):

- <= 0.088
- 0.08 - 0.26
- 0.26 - 0.43
- 0.44 - 0.87
- 0.87 - 1.31
- 1.31 - 1.75
- 1.75 - 3.15
- > 3.154

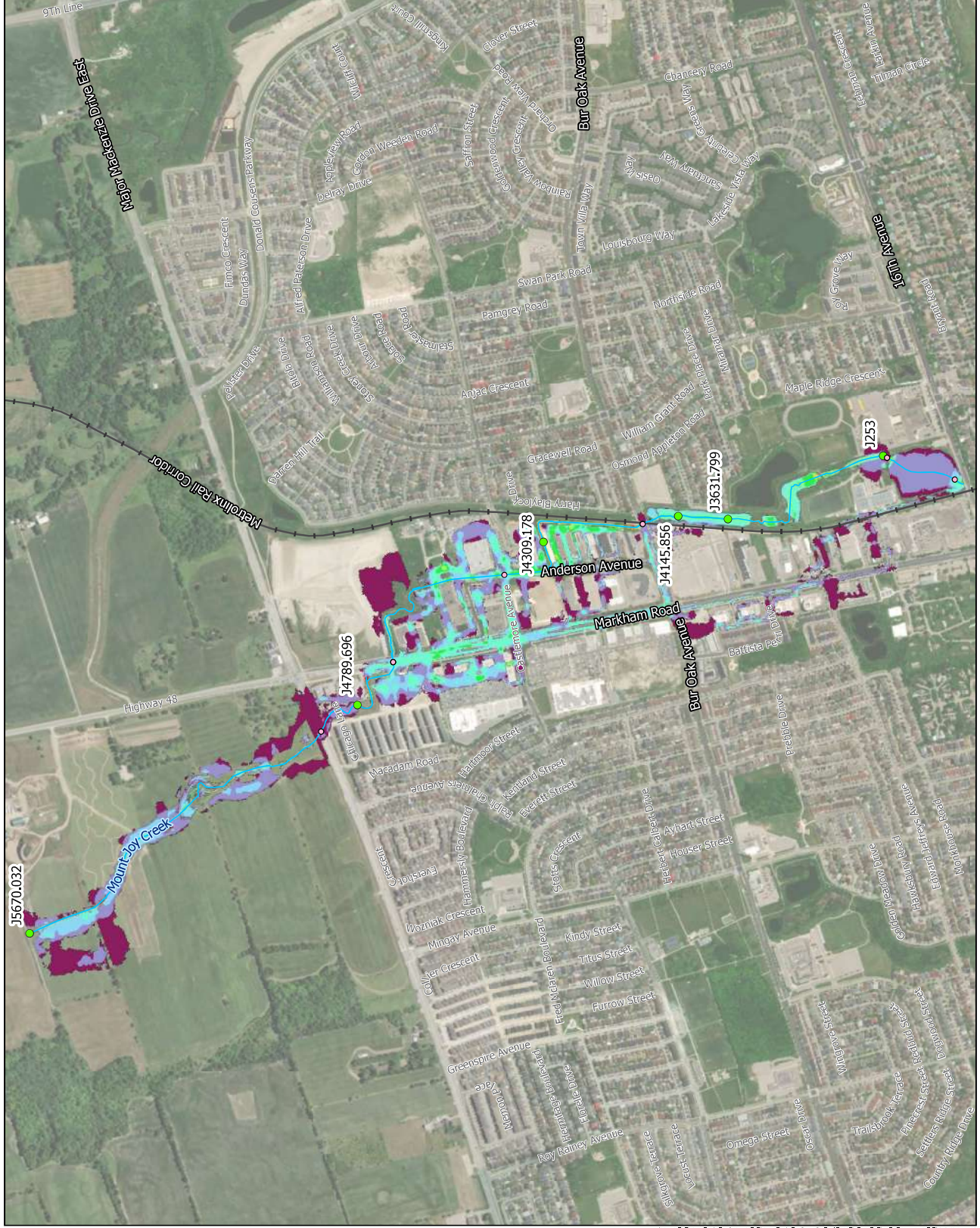
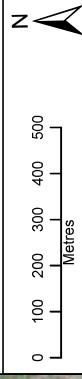


LOCATOR MAP

Figure

Flood Velocity Map
(ABL Existing conditions model)

Date: 3/10/2026
Project: UTM Zone 17N
Data Source: City of Markham, Eschmura
Created by: V.A.

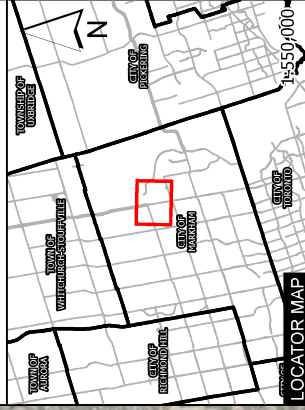




- Culverts
- Flow Stations
- River
- Rail Corridor

Flood Depth (m):

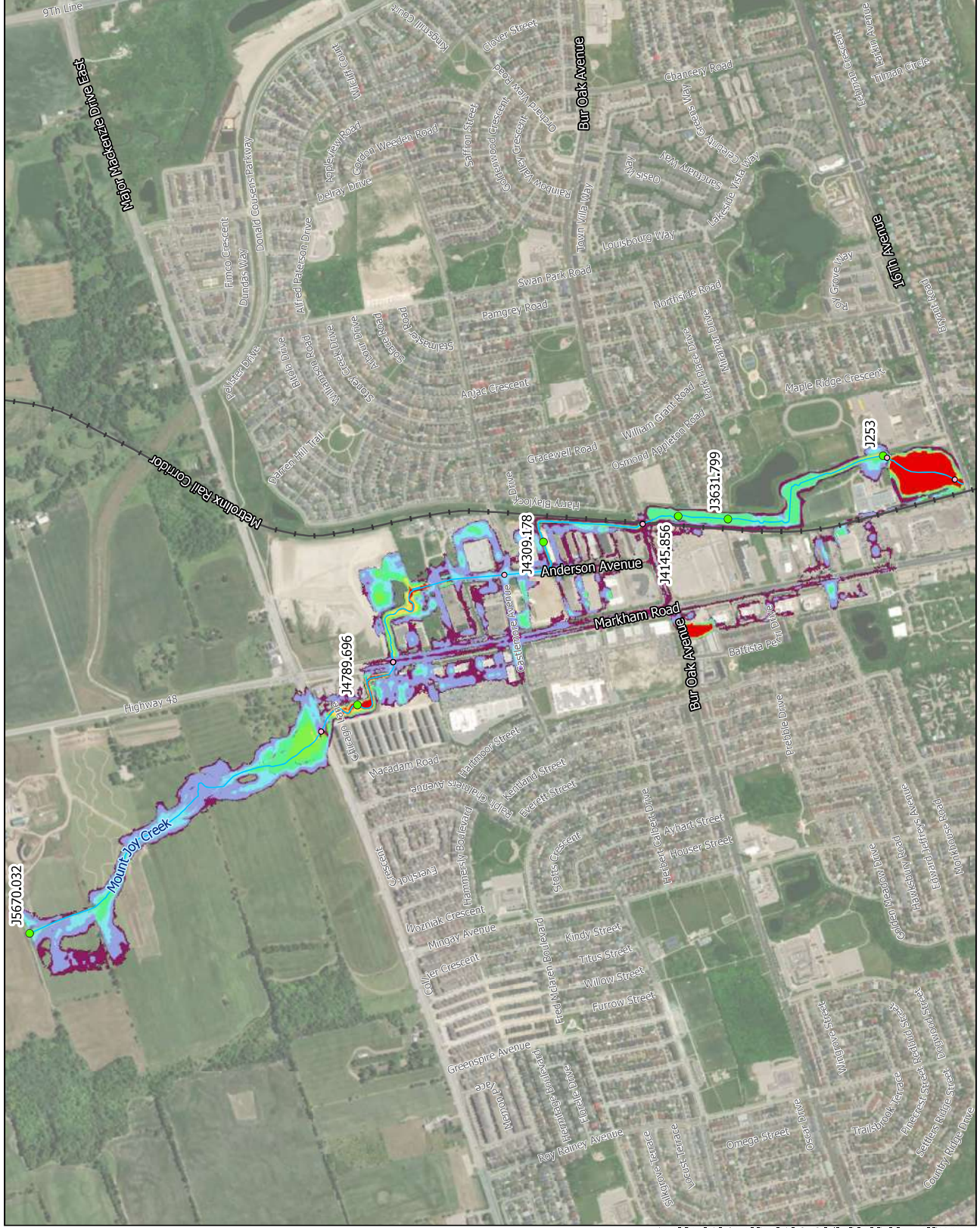
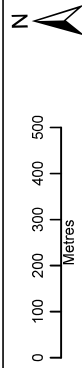
- <= 0.1
- 0.1 - 0.3
- 0.3 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- > 2



Figure

**Flood Depth Map
(ABL Existing conditions model)**

Date: 3/10/2026
Project: UTM Zone 17N
Data Source: City of Markham, Eschus.ca
Created by: V.M.

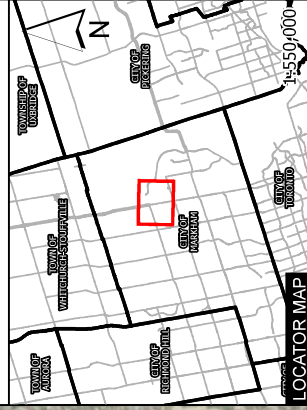




- Culverts
- Flow Stations
- River
- Rail Corridor

Difference in Water Surface Elevation(m):

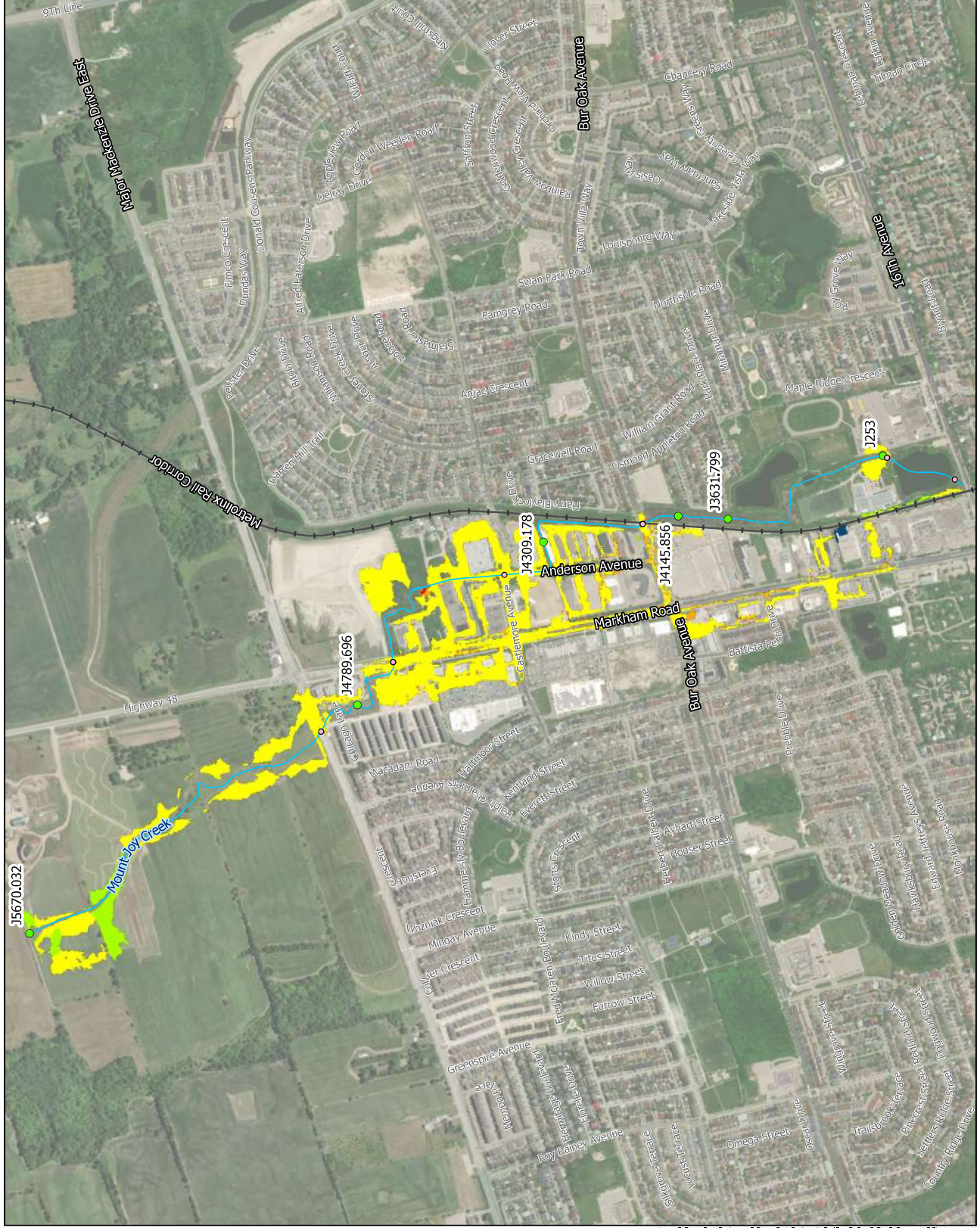
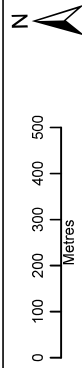
- <= -0.01856
- 0.01856 - 0
- 0 - 0.05
- 0.05 - 0.1
- 0.1 - 2.069



Figure

Difference in Water Surface Elevation Map
(Aquator Existing Conditions - 2022 TRCA Model)

Date: 3/10/2026
Project: Markham, UTM Zone 17N
Data Source: City of Markham, Eschul.ca
Created by: V.M.

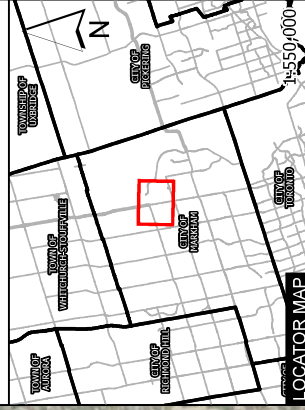




- Culverts
- Flow Stations
- River
- Rail Corridor

Difference in Water Surface Elevation(m):

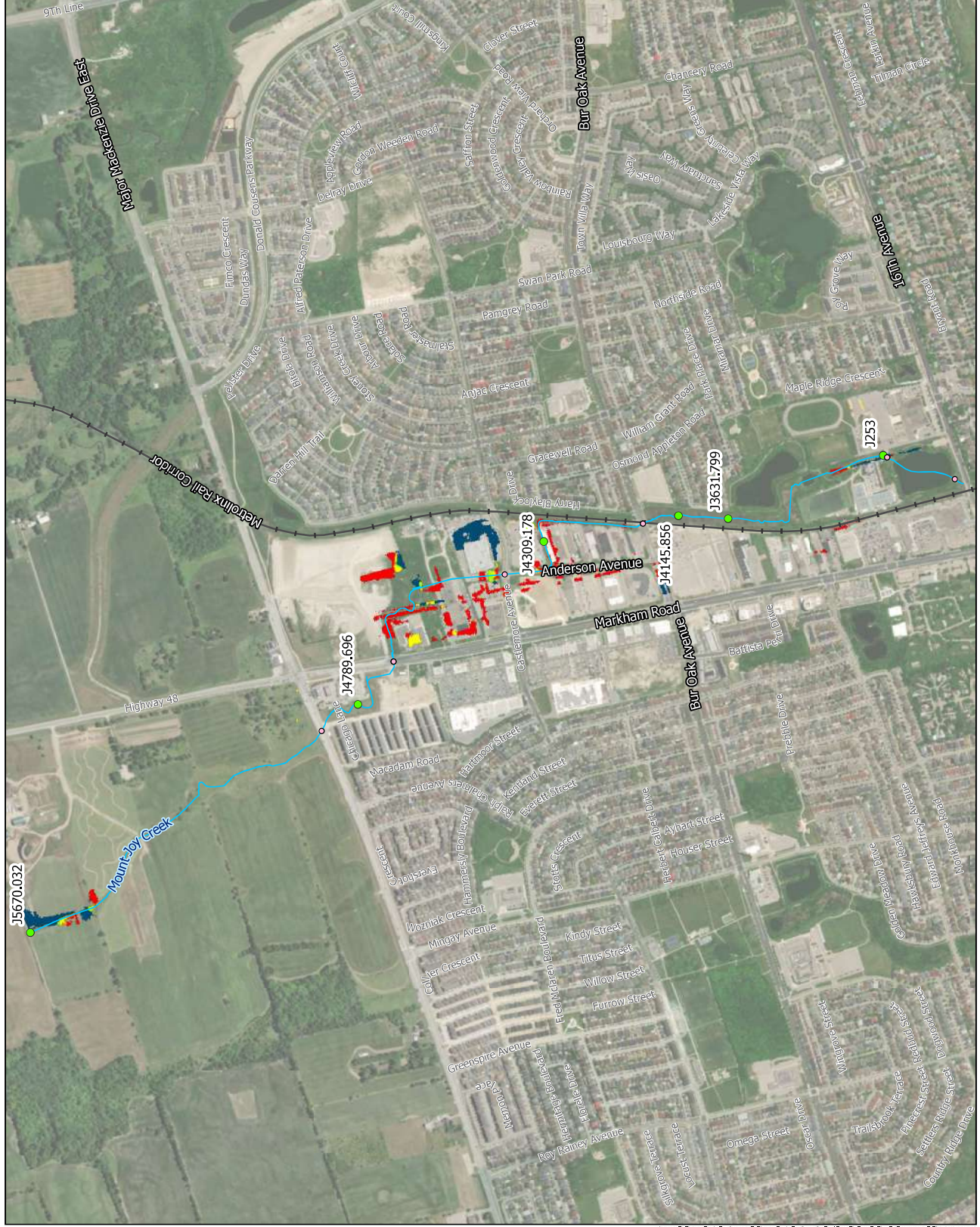
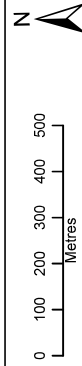
- <= -0.01856
- 0.01856 - 0
- 0 - 0.05
- 0.05 - 0.1
- 0.1 - 2.069



Figure

Difference in Water Surface Elevation Map
(Aquator Existing Conditions - 2023 Valdor Model)

Date: 3/10/2026
Project: Markham, UTM Zone 17N
Data Source: City of Markham, Eschulua.ca
Created by: V.M.



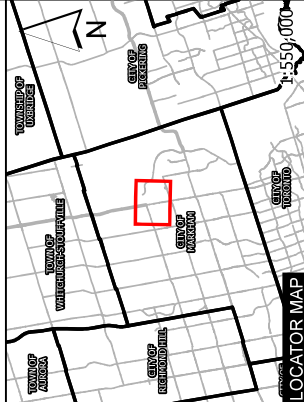


- Culverts
- Flow Stations
- River
- Rail Corridor

Flood Risk:

- High
- Medium
- Low

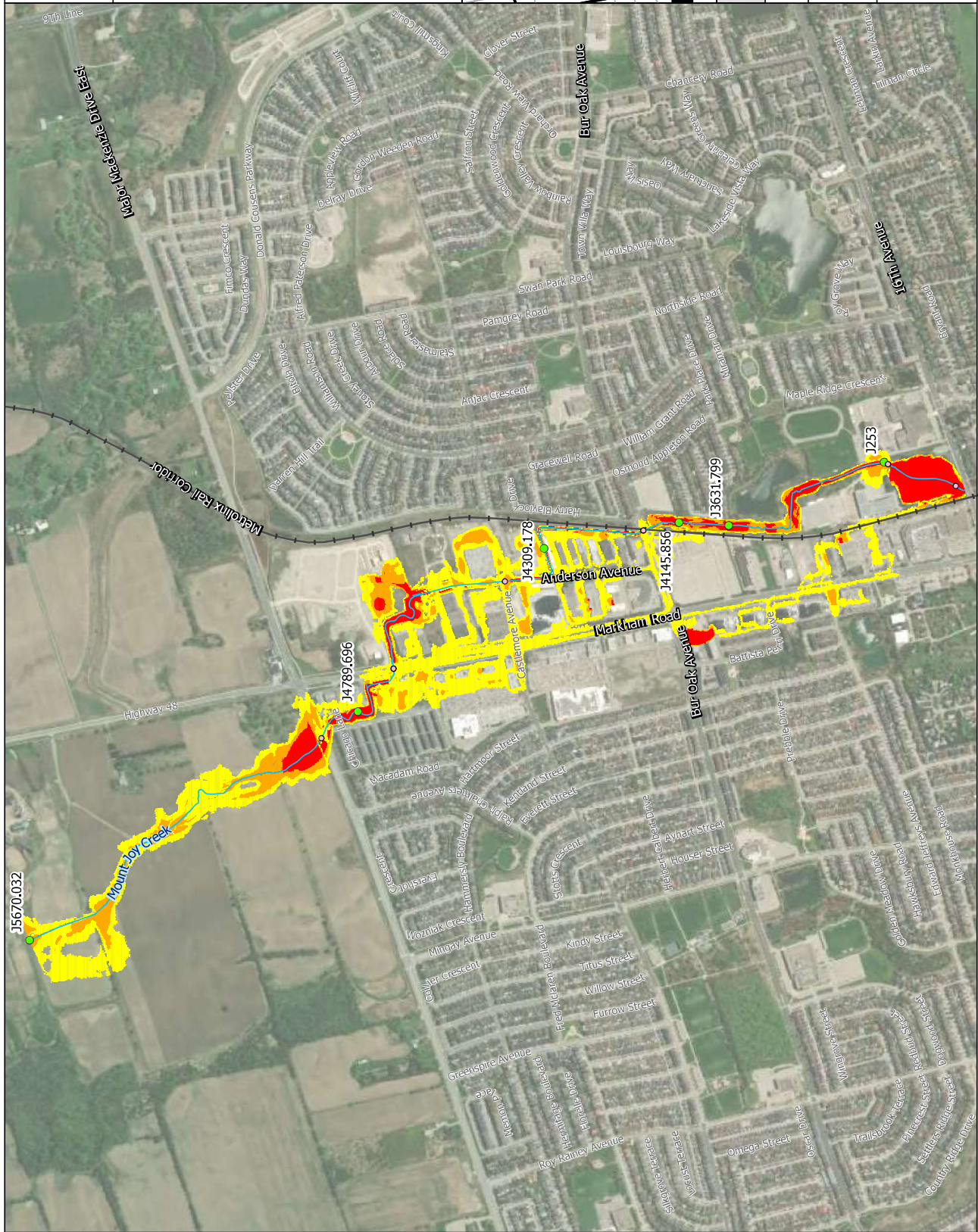
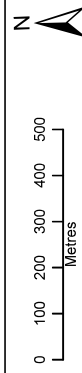
Parameter	Low Risk (Safe Pedestrian and Vehicular Access)	Medium Risk (Safe Pedestrian but no Vehicular Access)	High Risk (No Pedestrian or Vehicular Access)
Depth	< 0.3 m	> 0.3 m and < 0.8 m	>= 0.8 m
Velocity	< 1.7 m/s	> 1.7 m/s	>= 1.7 m/s
Depth x Velocity	< 0.4 m ² /s	< 0.4 m ² /s	>= 0.4 m ² /s



Figure

**Flood Risk Map -
Aquafor Existing Conditions**

Date: 7/17/2026
Project: Markham, UTM Zone 17N
Data Source: City of Markham, Eschmua.ca
Created by: V.M.





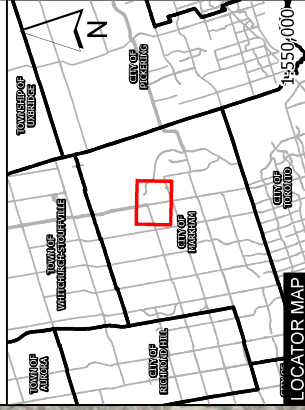
- Flow Stations
- Weirs
- Culverts
- River
- Rail Corridor

Regional Water Surface Elevation(m):

- <= 201
- 201 - 205.5
- 205.5 - 209.5
- 209.5 - 213.5
- > 213.5

Culverts:

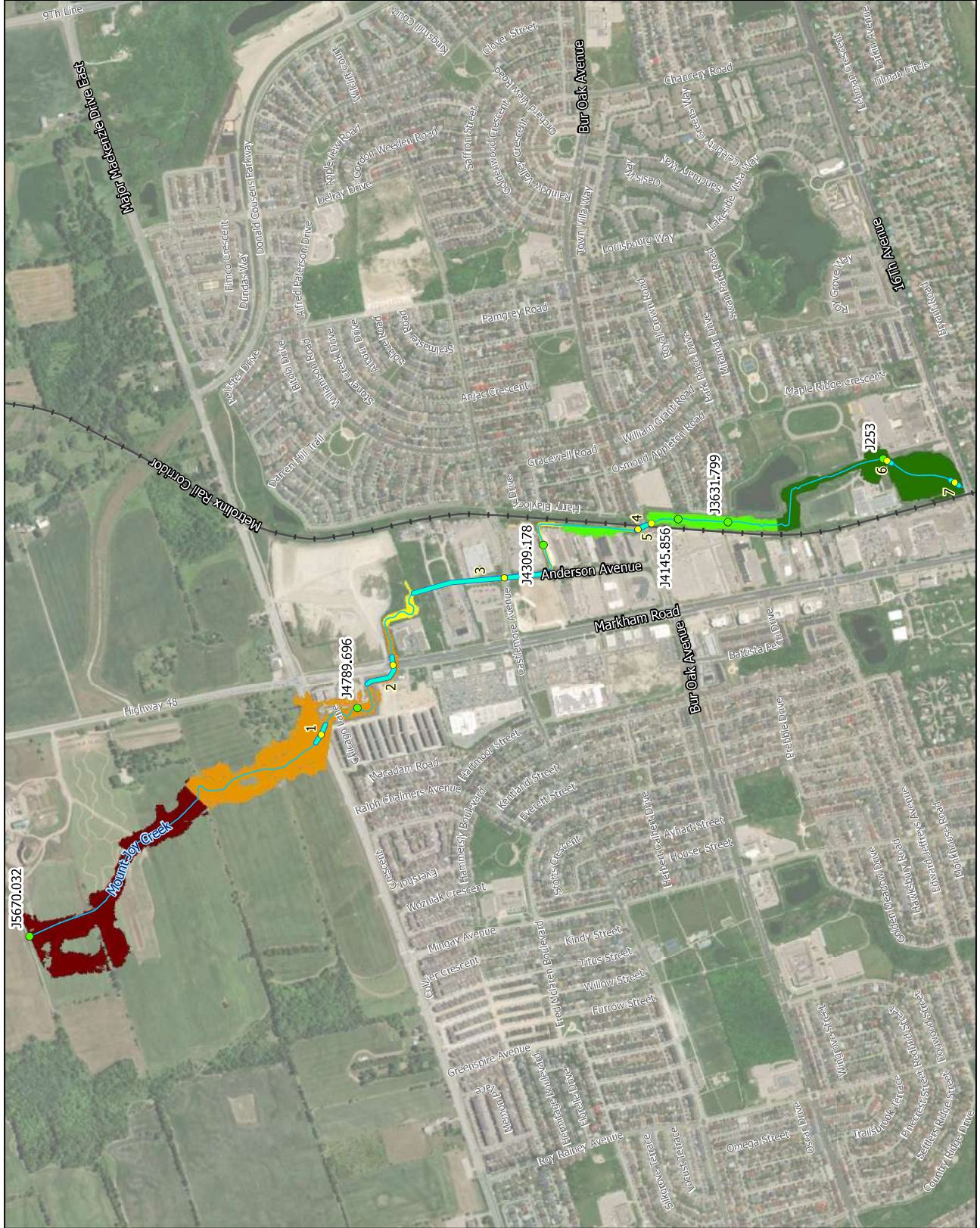
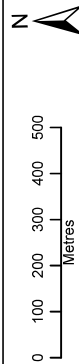
OBJECTID	MUID	Chainage
1	MajorMac_Culv rou_704	1103.05
2	HWY48_Culv_1 rou_705	1487.13
3	Anderson_Culv rou_706	2046.23
4	BurOak_Culv_1 rou_664	2621.42
5	BurOak_Culv_2 rou_664	2621.42
6	PrivateDriveWay_Culv rou_662	3456.63
7	SWM Pond_Culv rou_669	3666.67



Figure

Regional Water Surface Elevation Map
(ABL Proposed Alternative 7 model)

Date: 3/12/2008
Project: UTM Zone 17N
Data Source: City of Markham, Technica.ca
Created by: V.A.

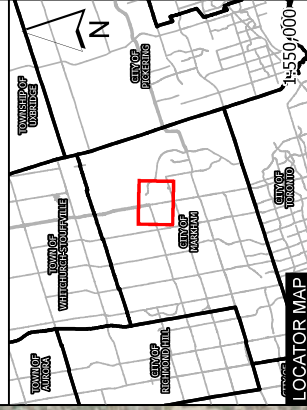




- Flow Stations
- Weirs
- Culverts
- River
- Rail Corridor

Regional Water Surface Elevation (m):

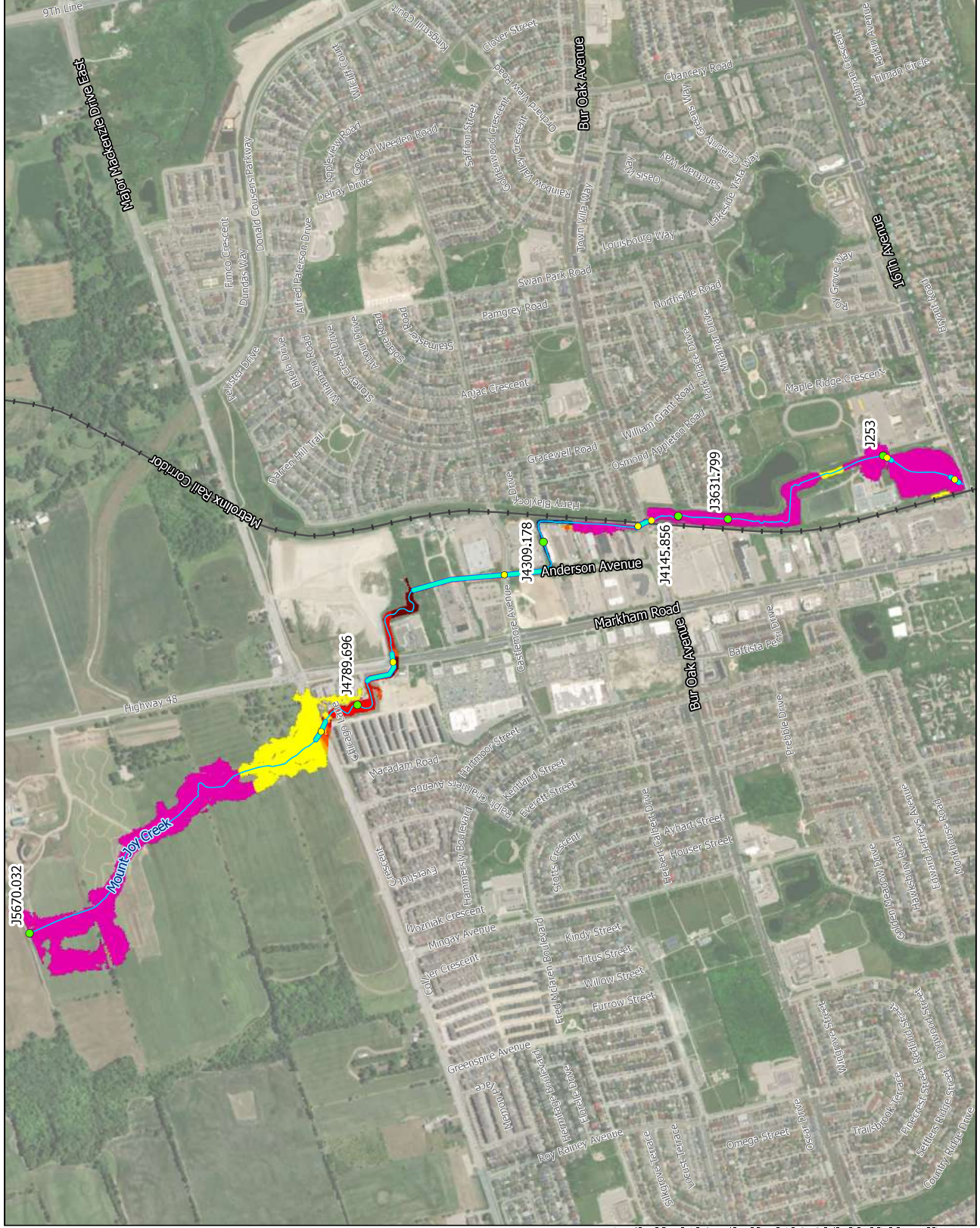
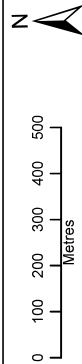
- Decrease 2 - 0.88 m
- Decrease 0.88 - 0.38 m
- Decrease 0.38 - 0.16 m
- Decrease 0.15 - 0.06 m
- Decrease 0.06 - 0.01 m
- Decrease/Increase (-)0.01 - (+)0.088 m
- Increase 0.09 - 0.31 m



Figure

**Difference in Water Surface Elevation Map
(Aqualor Proposed Alternative 7 - 2026 Ex. ABL Model)**

Date: 3/11/2026
Project: UTM Zone 17N
Data Source: City of Markham, Eschul.ca
Created by: V.A.

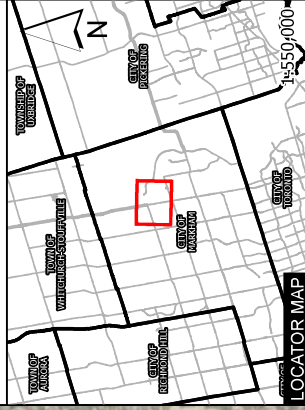




- Flow Stations
- Weirs
- Culvert
- River
- Rail Corridor

Flood Velocity (m/s):

- <= 0.088
- 0.08 - 0.26
- 0.26 - 0.43
- 0.44 - 0.87
- 0.87 - 1.31
- 1.31 - 1.75
- 1.75 - 3.15
- > 3.154

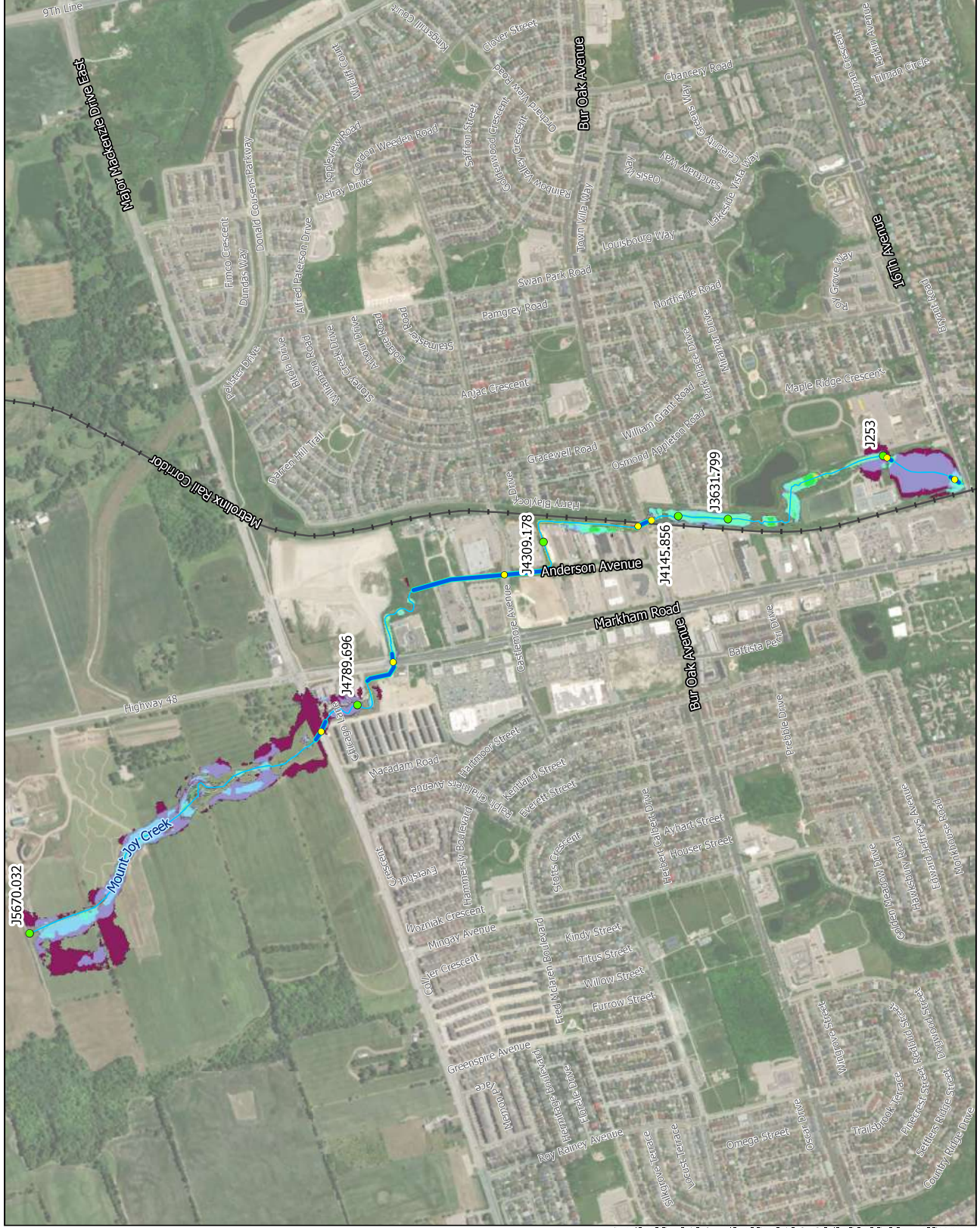
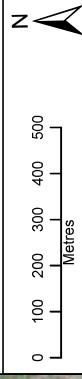


LOCATOR MAP

Figure

Flood Velocity Map
(ABL Proposed Alternative 7 model)

Date: 3/11/2026
Project: UTM Zone 17N
Data Source: City of Markham, Eschul.ca
Created by: V.A.

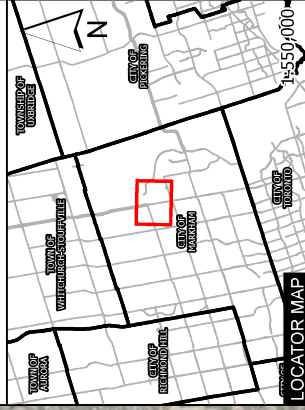




- Flow Stations
- Weirs
- Culvert
- River
- Rail Corridor

Flood Depth (m):

- <= 0.1
- 0.1 - 0.3
- 0.3 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- > 2

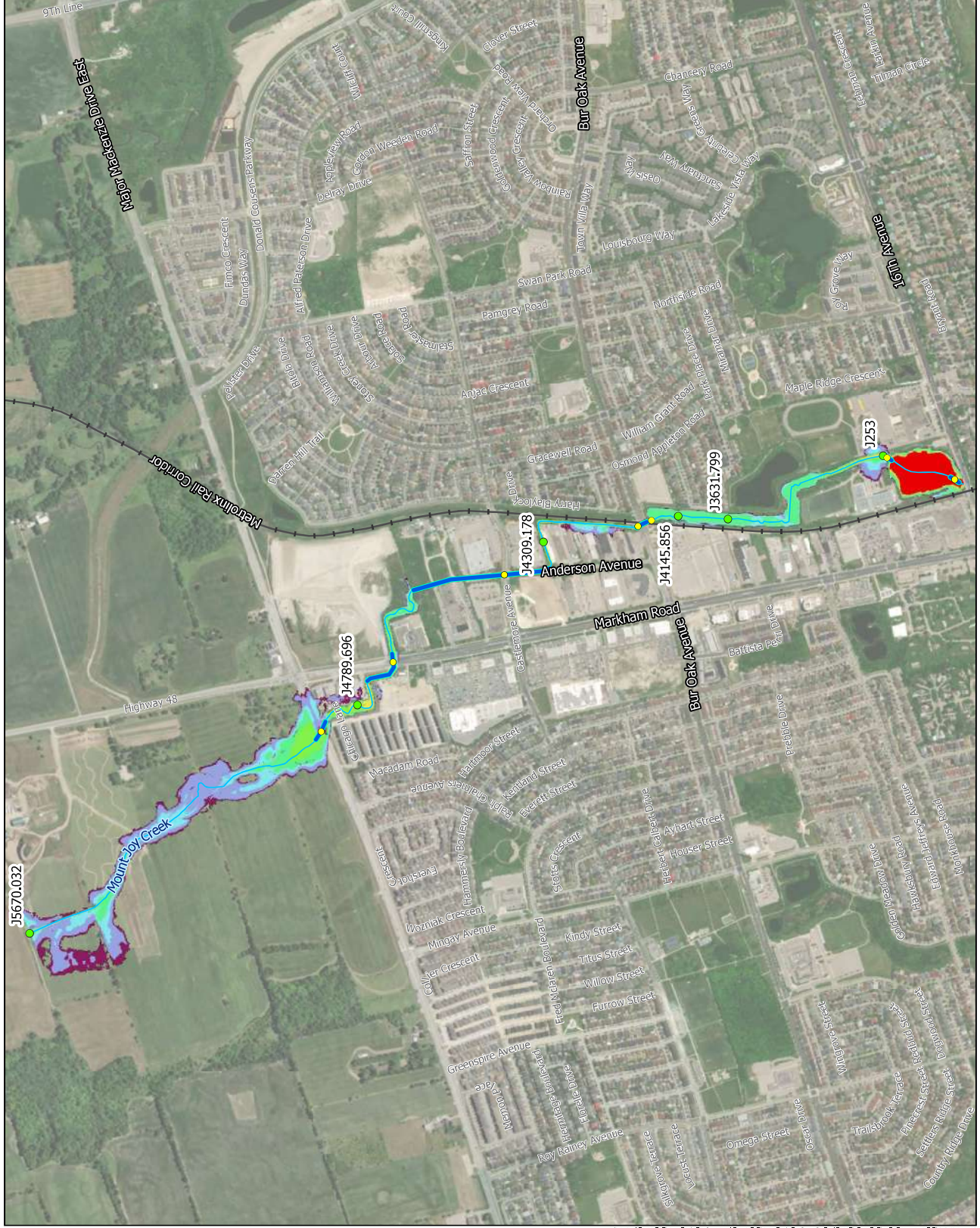
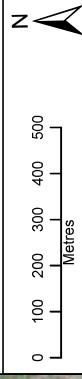


LOCATOR MAP

Figure

Water Depth
(ABL Proposed Alternative 7)

Date: 3/11/2026
Drawn by: JTM, Zma, 17N
Data Source: City of Markham, Eschul.ca
Created by: V.A.

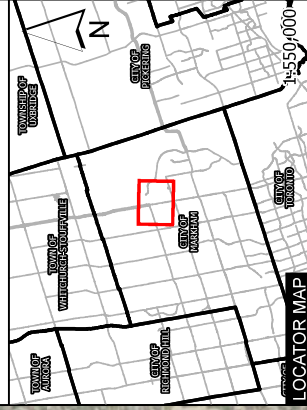




- Flow Stations
- Weirs
- Culvert
- River
- Rail Corridor

Difference in Water Surface Elevation(m):

- Decrease 1.67 - 1.1 m
- Decrease 1.1 - 0.6 m
- Decrease 0.6 - 0.17 m
- Decrease/Increase (-)0.17 - (+)0.02 m
- Increase 0.02 - 0.1 m

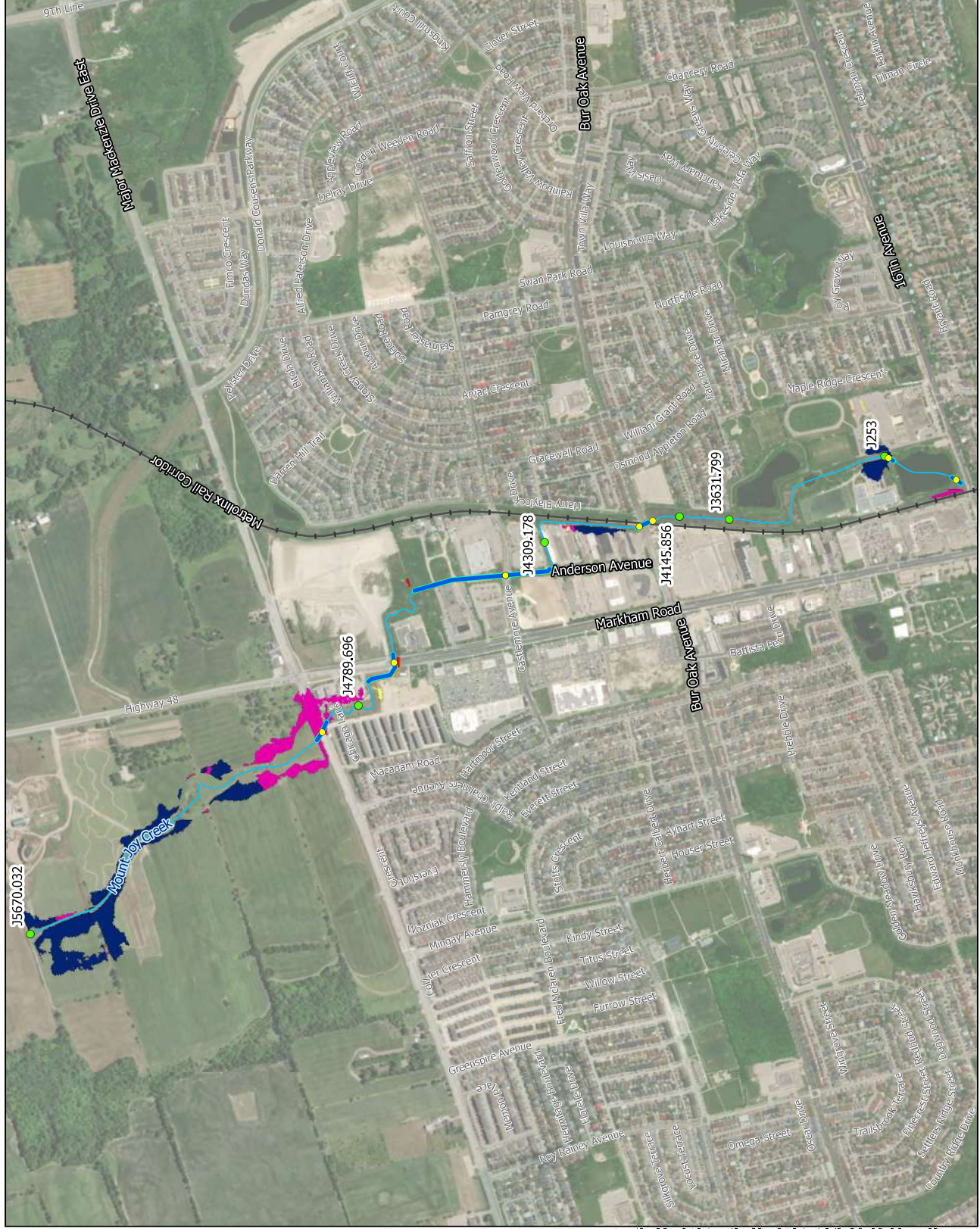
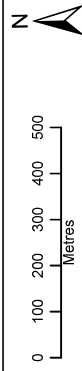


LOCATOR MAP

Figure

Difference in Water Surface Elevation Map
(Aquafor Proposed Alternative / - 2022 TRCA Ex. Model)

Date: 3/11/2025
Project: UTM Zone 17N
Data Source: City of Markham, Eschul.ca
Created by: V.M.

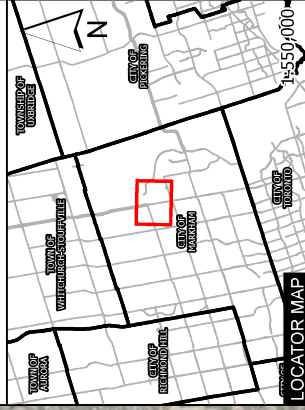




- Flow Stations
- Weirs
- Culvert
- River
- Rail Corridor

Difference in Water Surface Elevation(m):

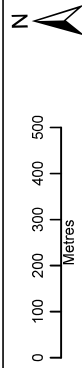
- Decrease 2.25 - 1.49 m
- Decrease 1.49 - 1.1 m
- Decrease 1.11 - 0.7 m
- Decrease/Increase (-)0.7 - (+)0.21 m
- Increase 0.215 - 1.145 m



Figure

Difference in Water Surface Elevation Map
(Aquafar Proposed Alternative 7 – 2023 Ex. Valdor Model)

Date: 3/11/2028
Project: Aquafar, UTM Zone 17N
Data Source: City of Markham, Eschul.ca
Created by: V.A.T.



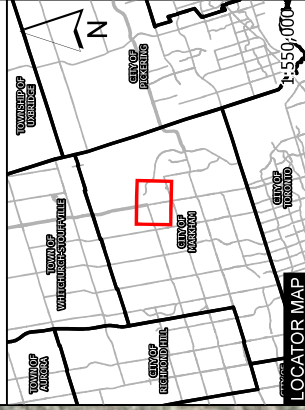


- Weirs
- Flow Stations
- Culvert
- River
- Rail Corridor

Flood Risk:

- High
- Medium
- Low

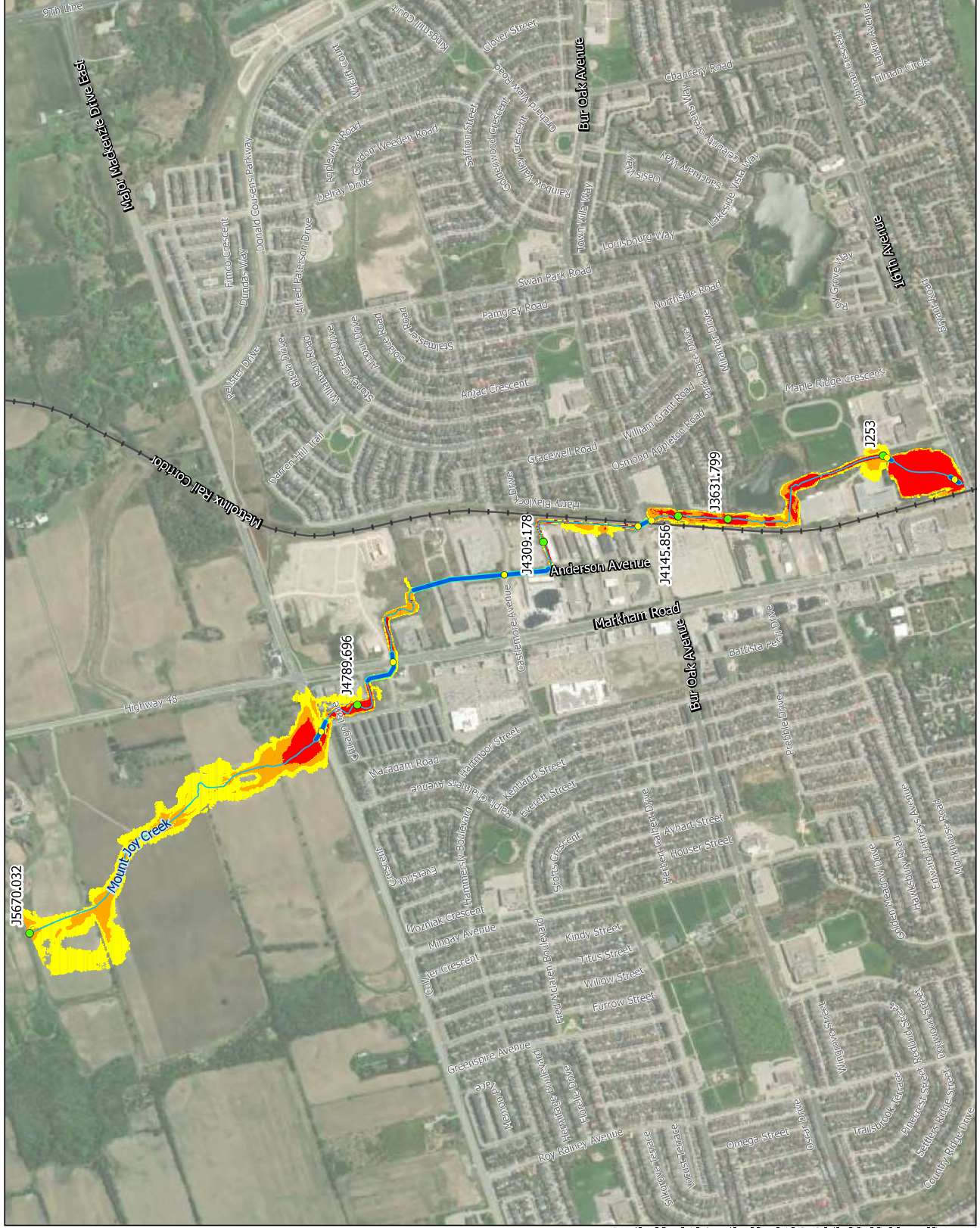
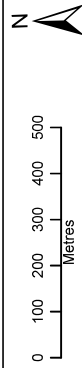
Parameter	Low Risk (Safe Pedestrian and Vehicular Access)	Medium Risk (Safe Pedestrian but no Vehicular Access)	High Risk (No Pedestrian or Vehicular Access)
Depth	< 0.3 m	> 0.3 m and < 0.8 m	>= 0.8 m
Velocity	< 1.7 m/s	> 1.7 m/s	>= 1.7 m/s
Depth x Velocity	< 0.4 m ² /s	< 0.4 m ² /s	>= 0.4 m ² /s



Figure

**Flood Risk Map -
Aquafor Proposed Alternative 7**

Date: 7/17/2026
Project: Aquafor
Data Source: City of Markham, Eschmuck
Created by: V.A.

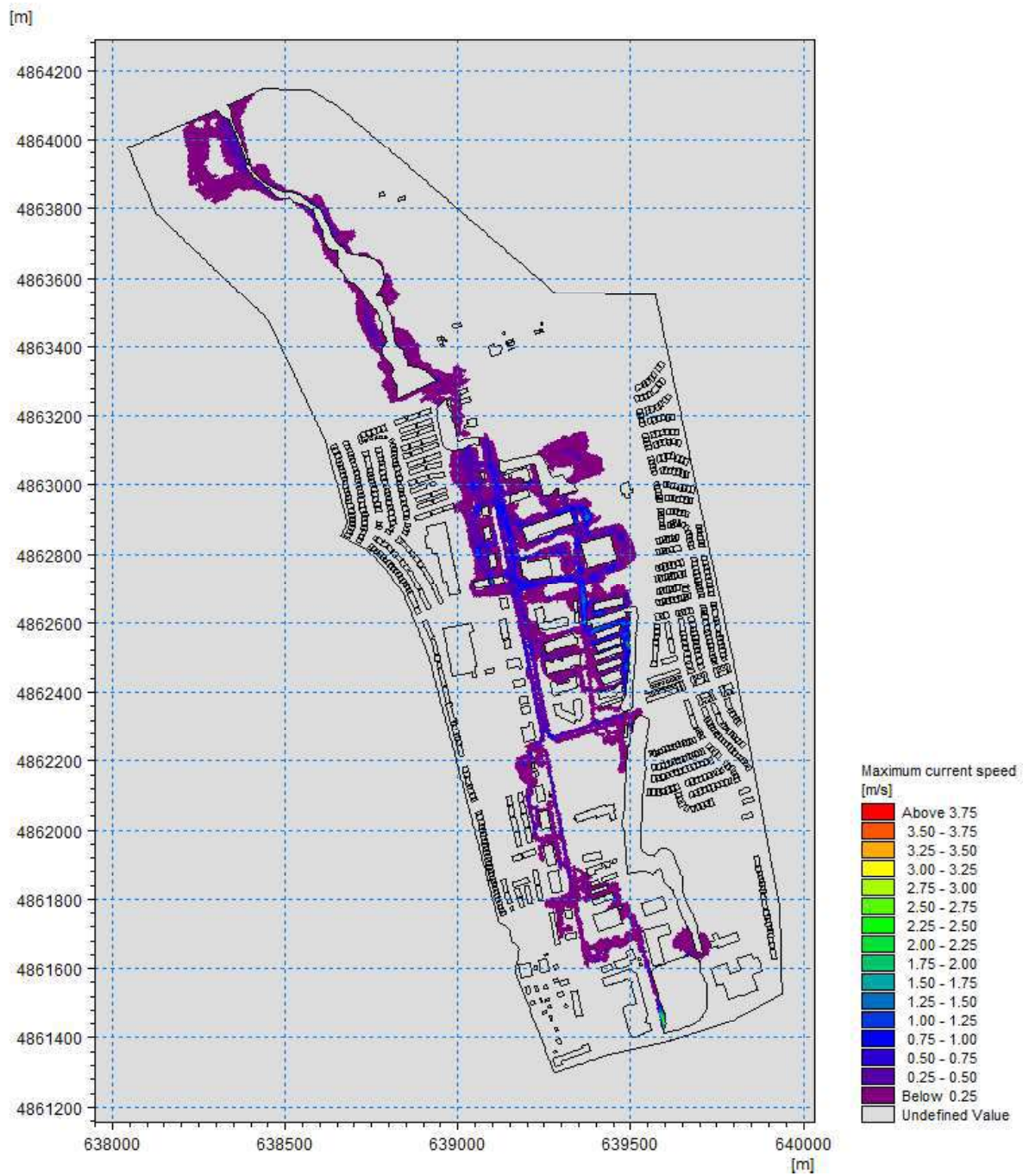


Other Alternatives - Model Results (2025)

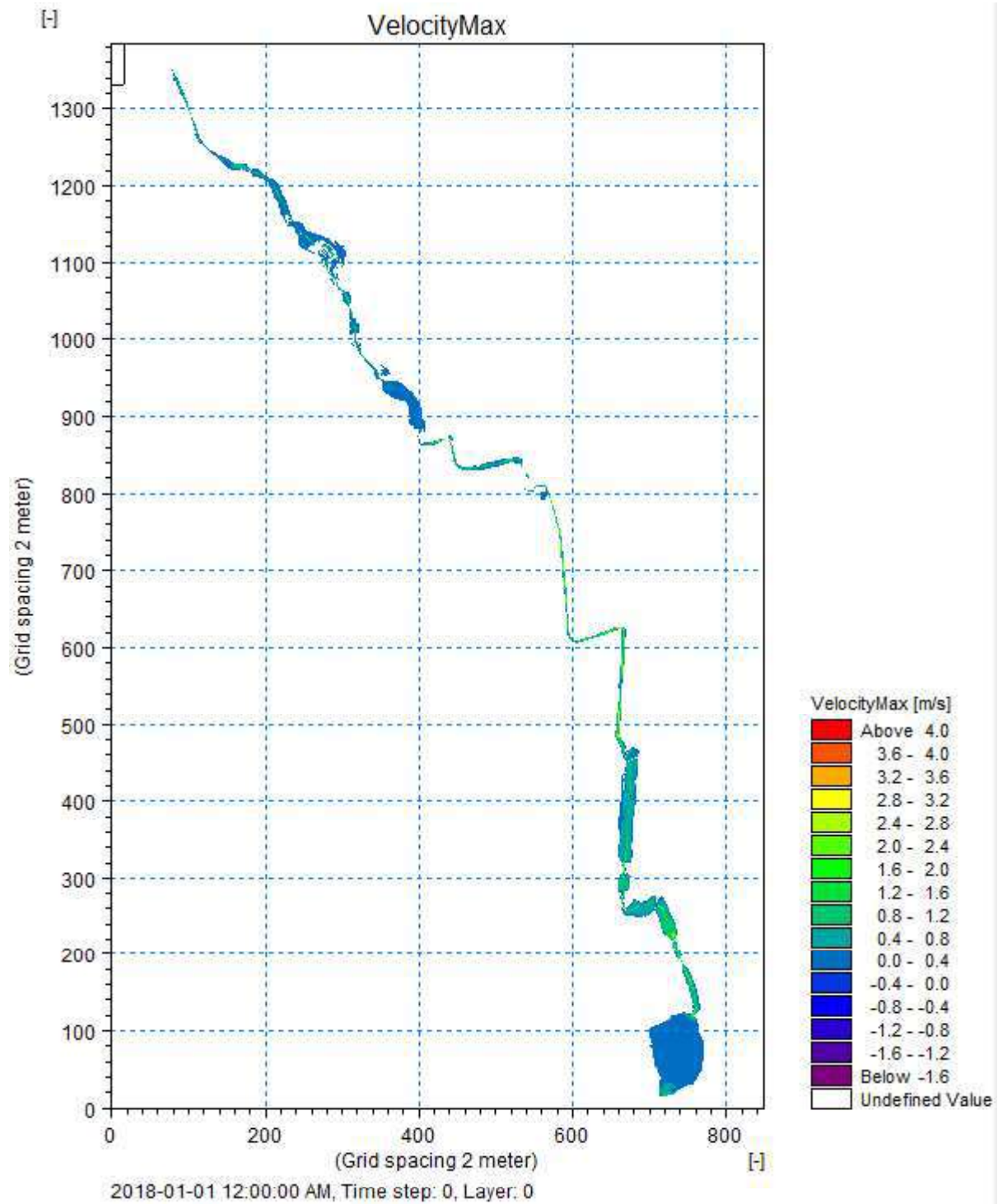
These model scenarios were originally developed in November 2025 and have not been updated since that time. During meetings with the City in March 2026, it was agreed that only the Existing Conditions model (following its conversion to MIKE+) and Alternative 7 (the preliminary preferred alternative) would be updated. Accordingly, the remaining alternative scenarios continue to reflect the November 2025 model assumptions and inputs.

Alternative 1

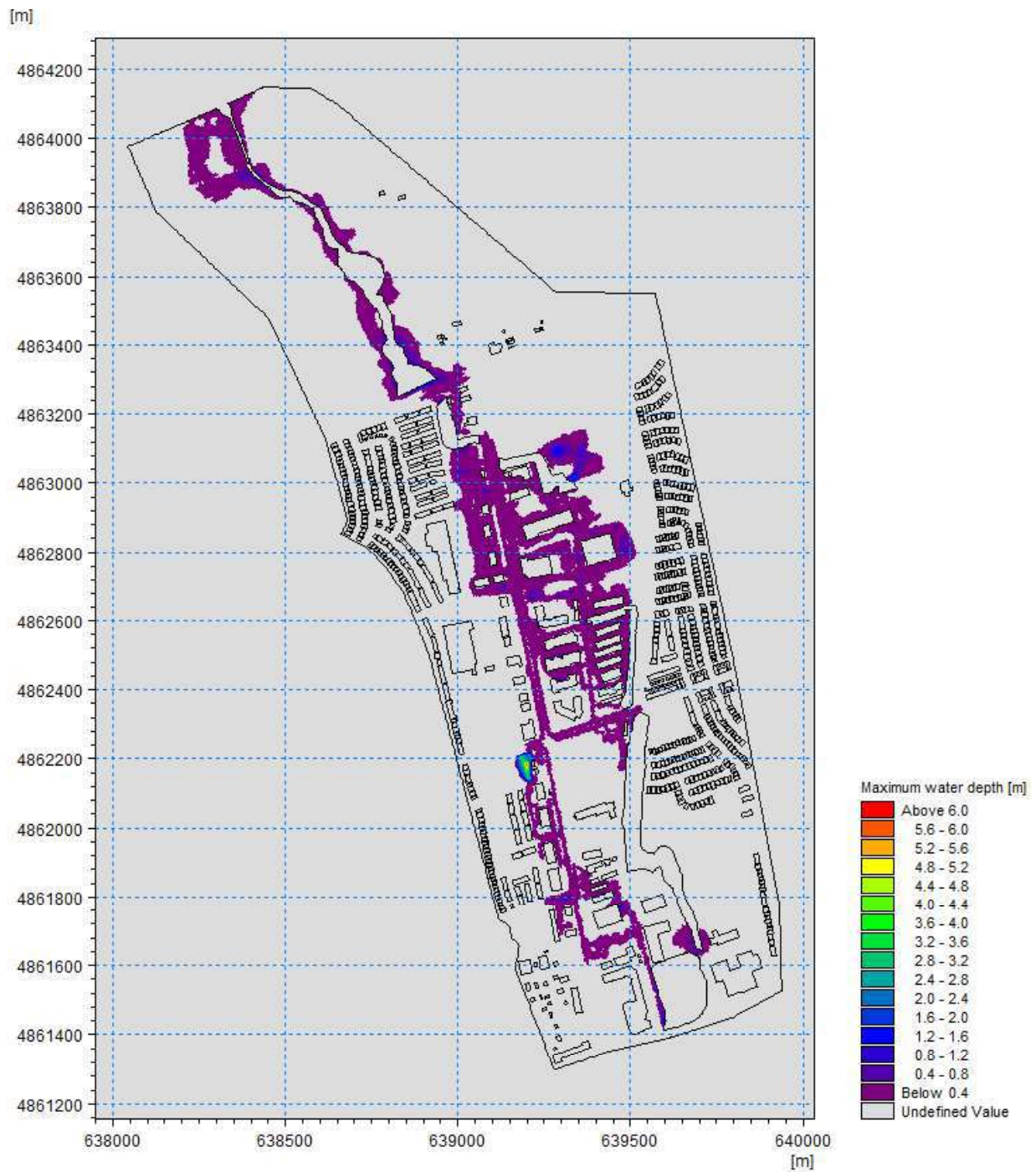
2D Flow velocity



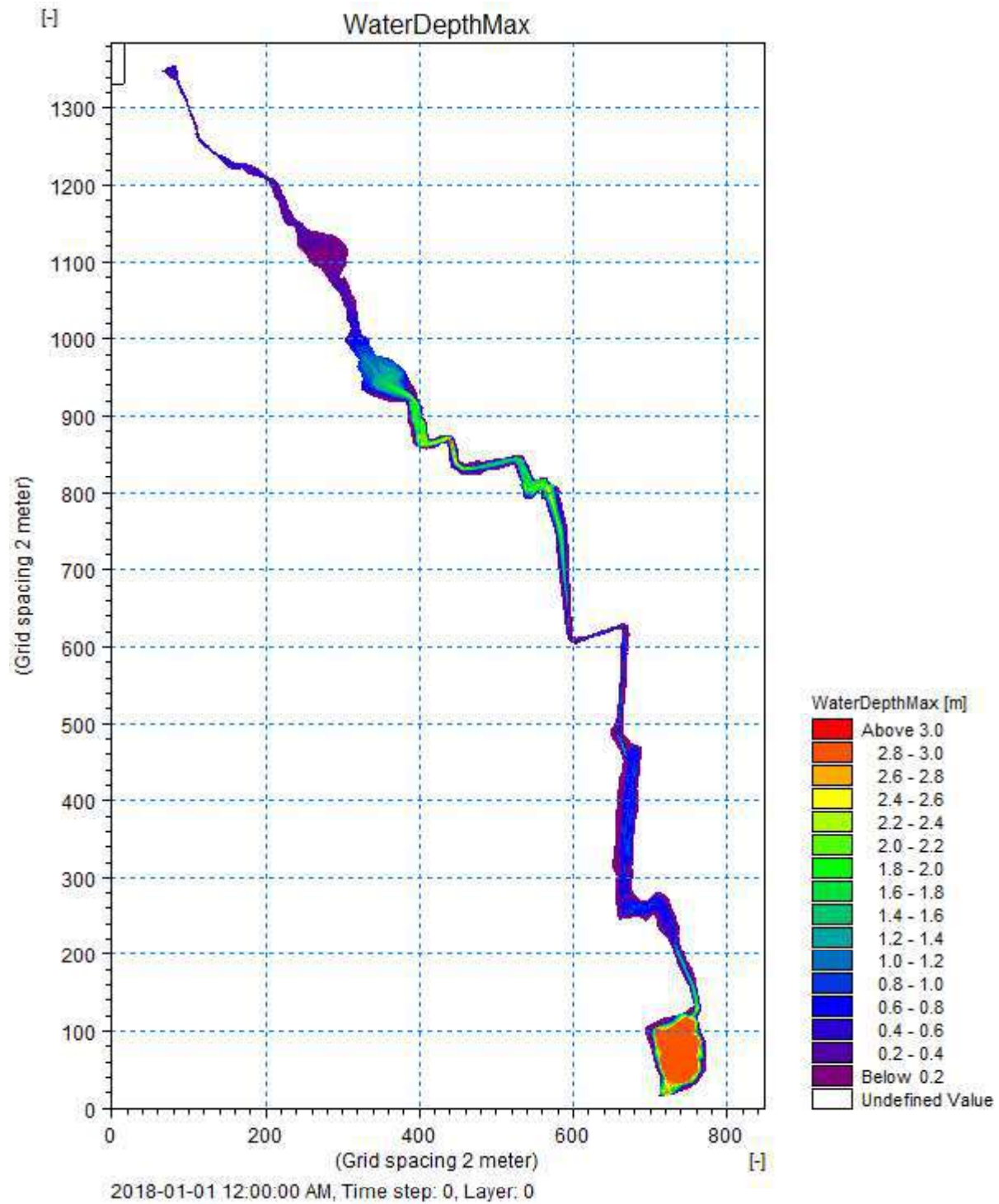
1D Flow velocity



2D Water depth (m)

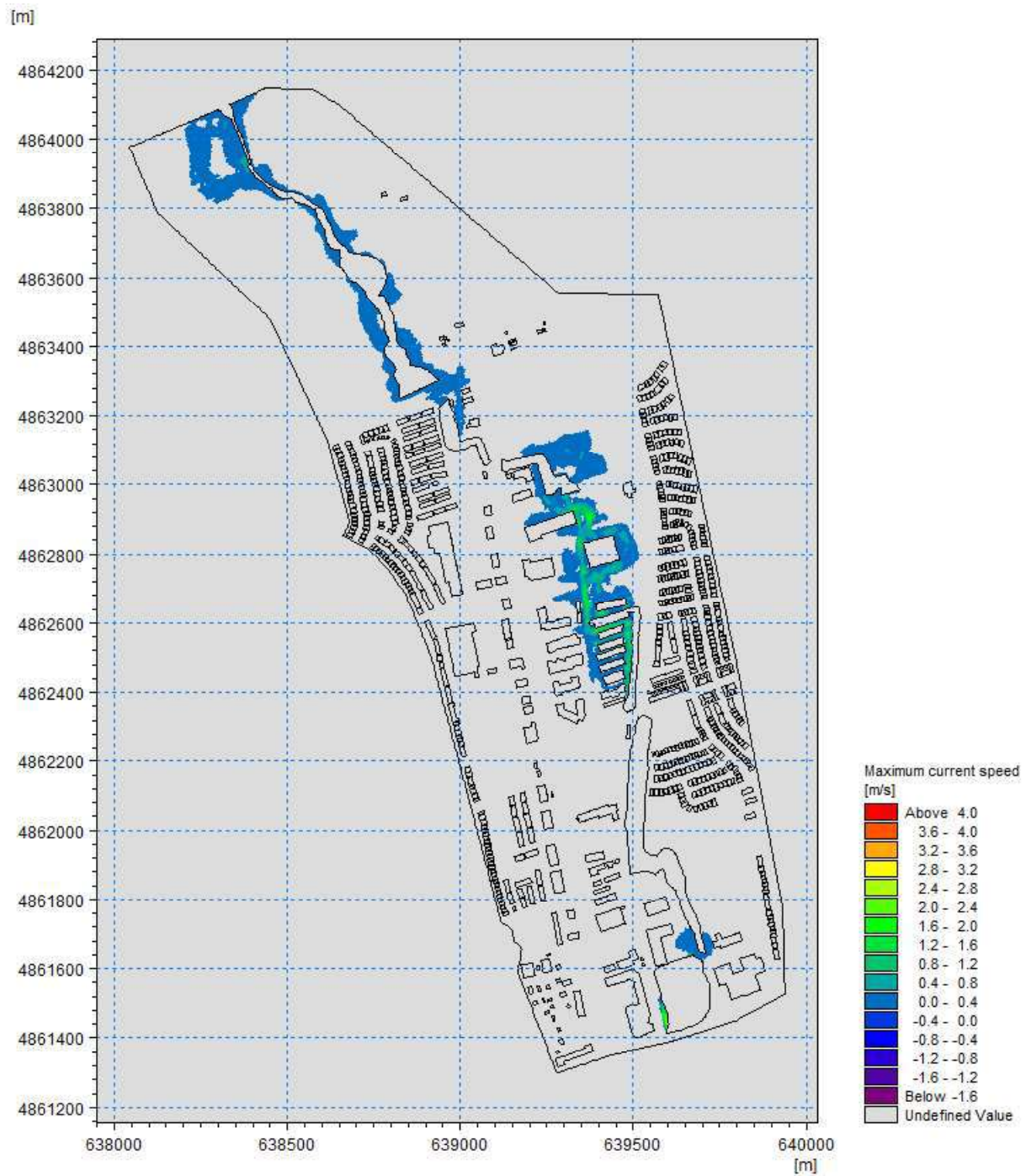


1D Water depth (m)

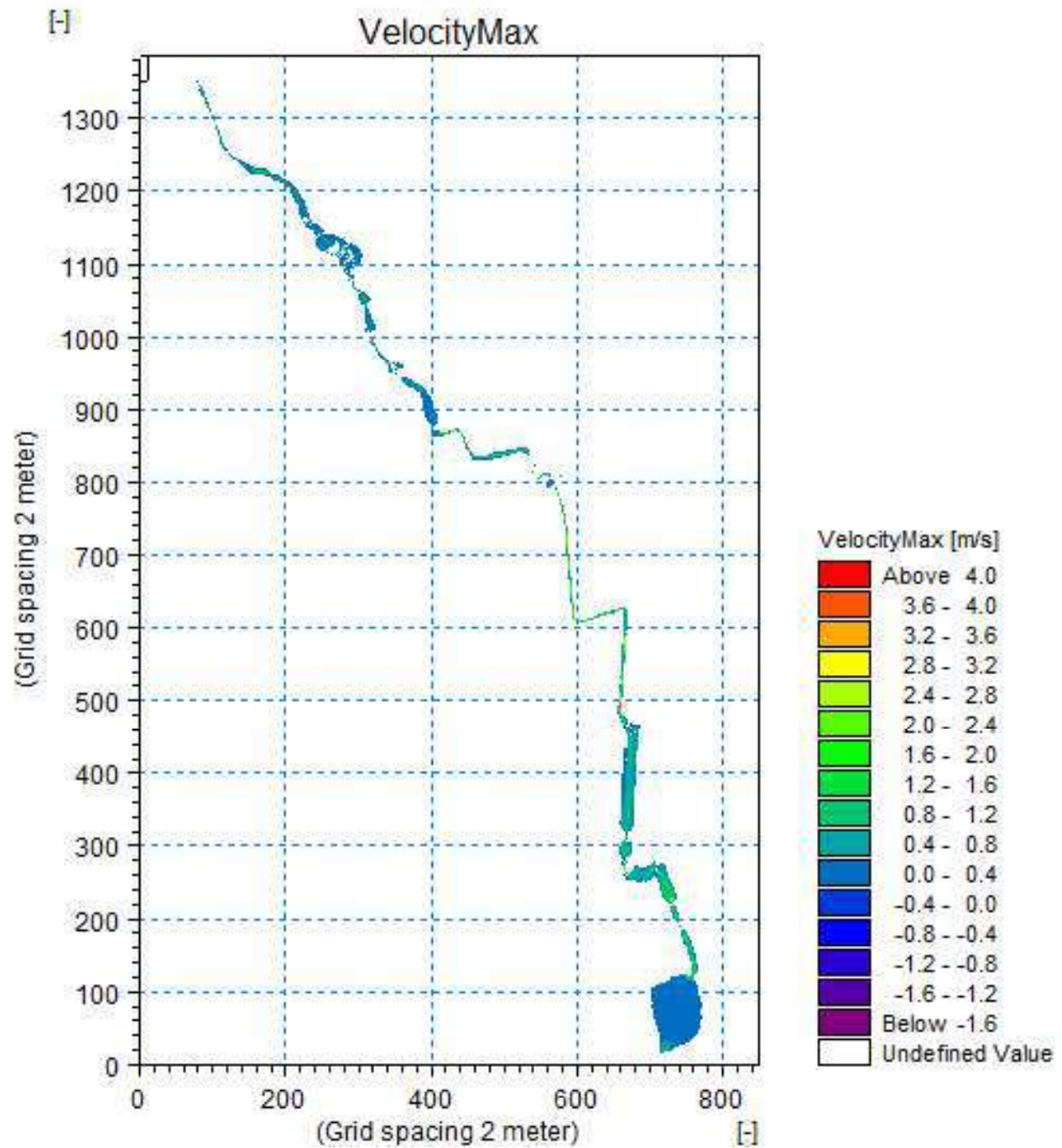


Alternative 3

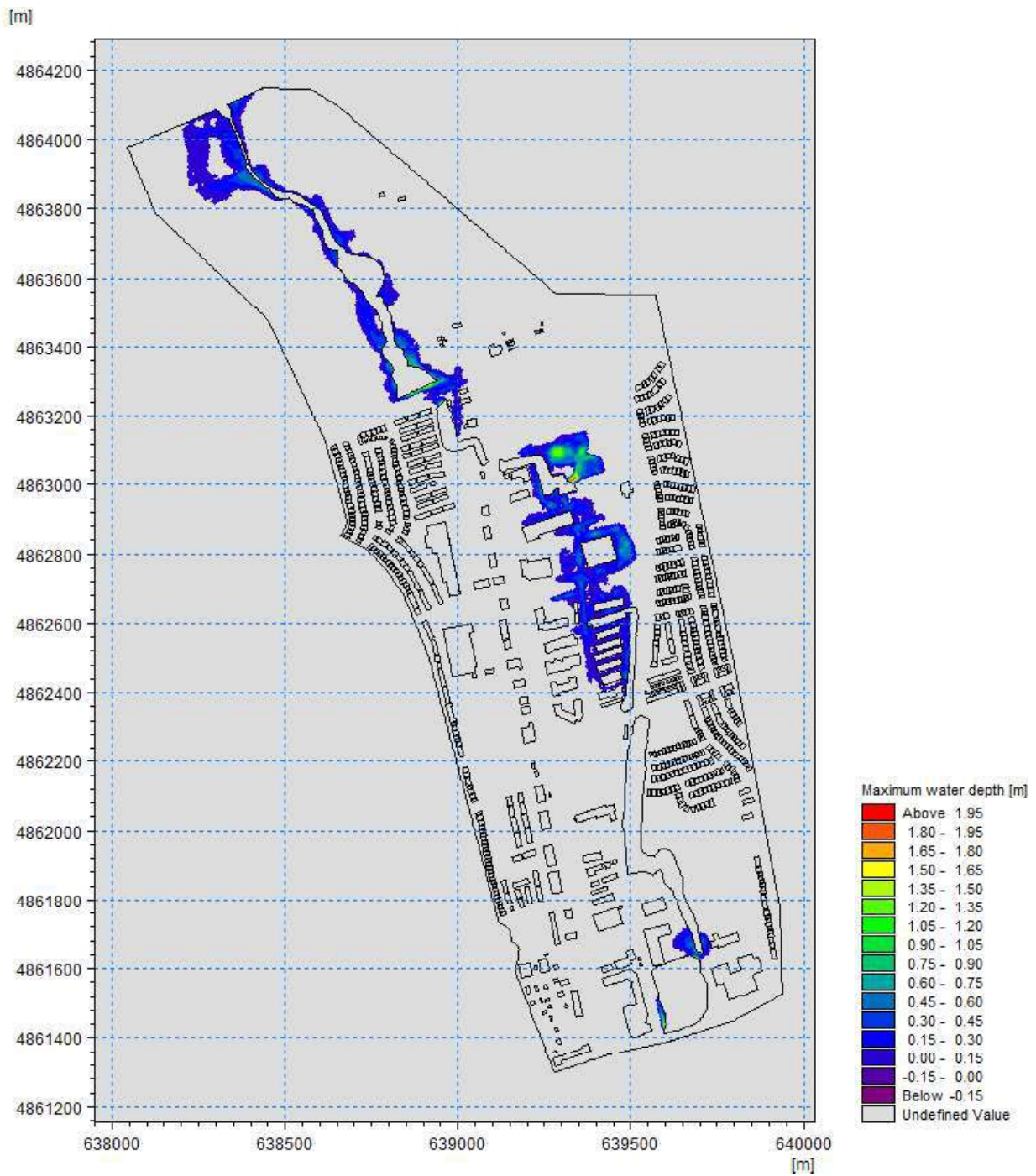
2D Flow velocity



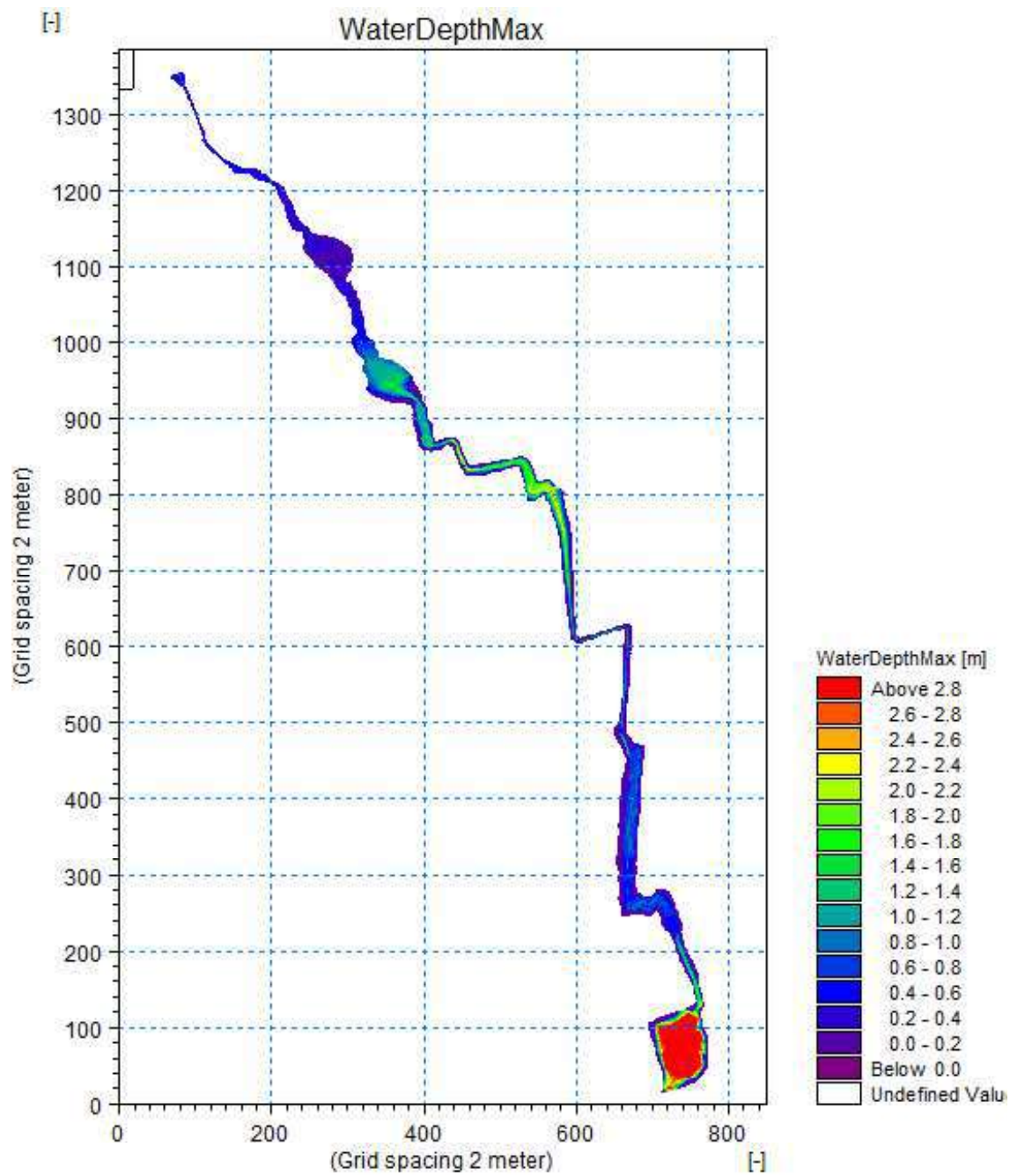
1D Flow velocity



2D Water depth (m)

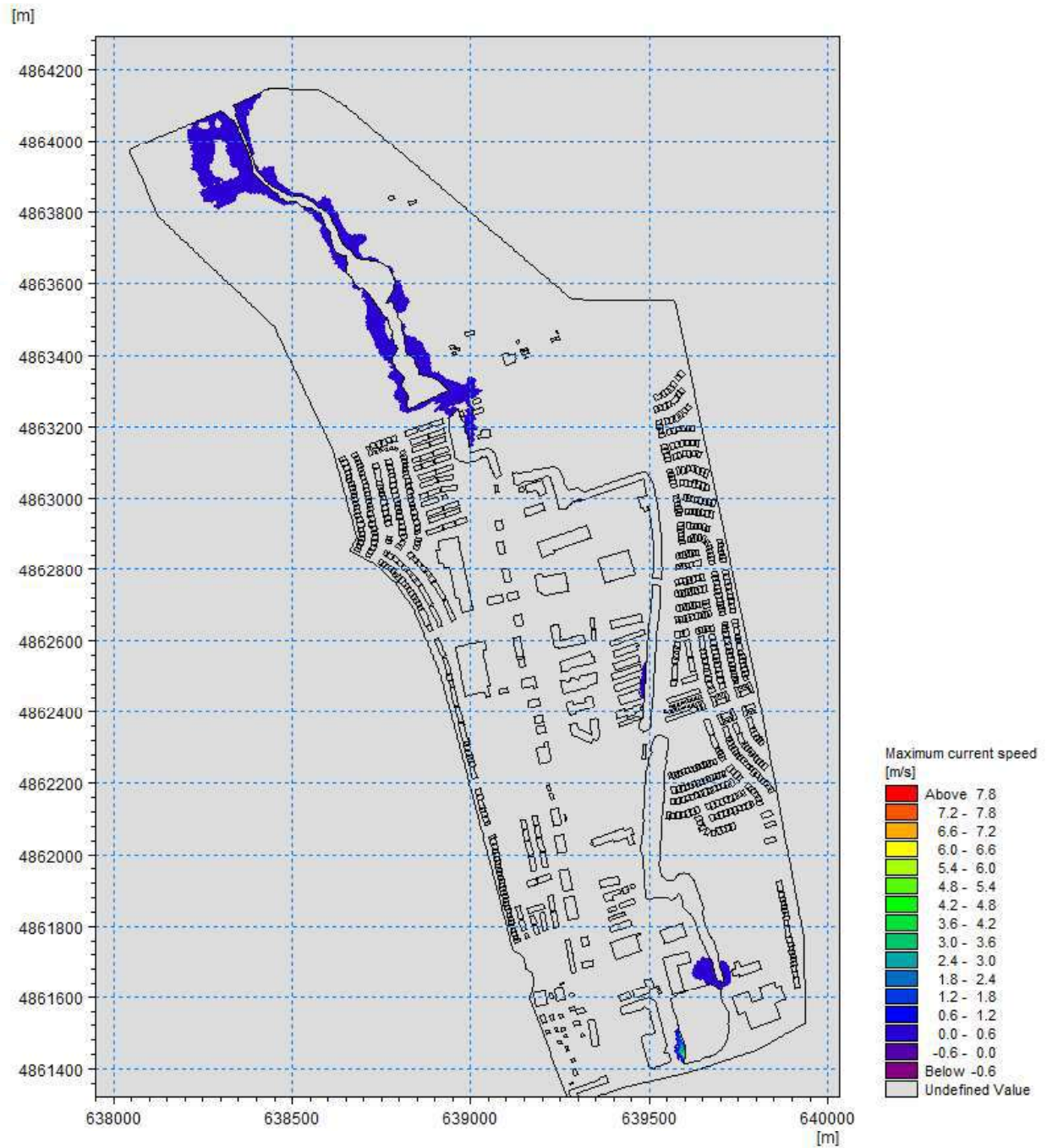


1D Water depth (m)

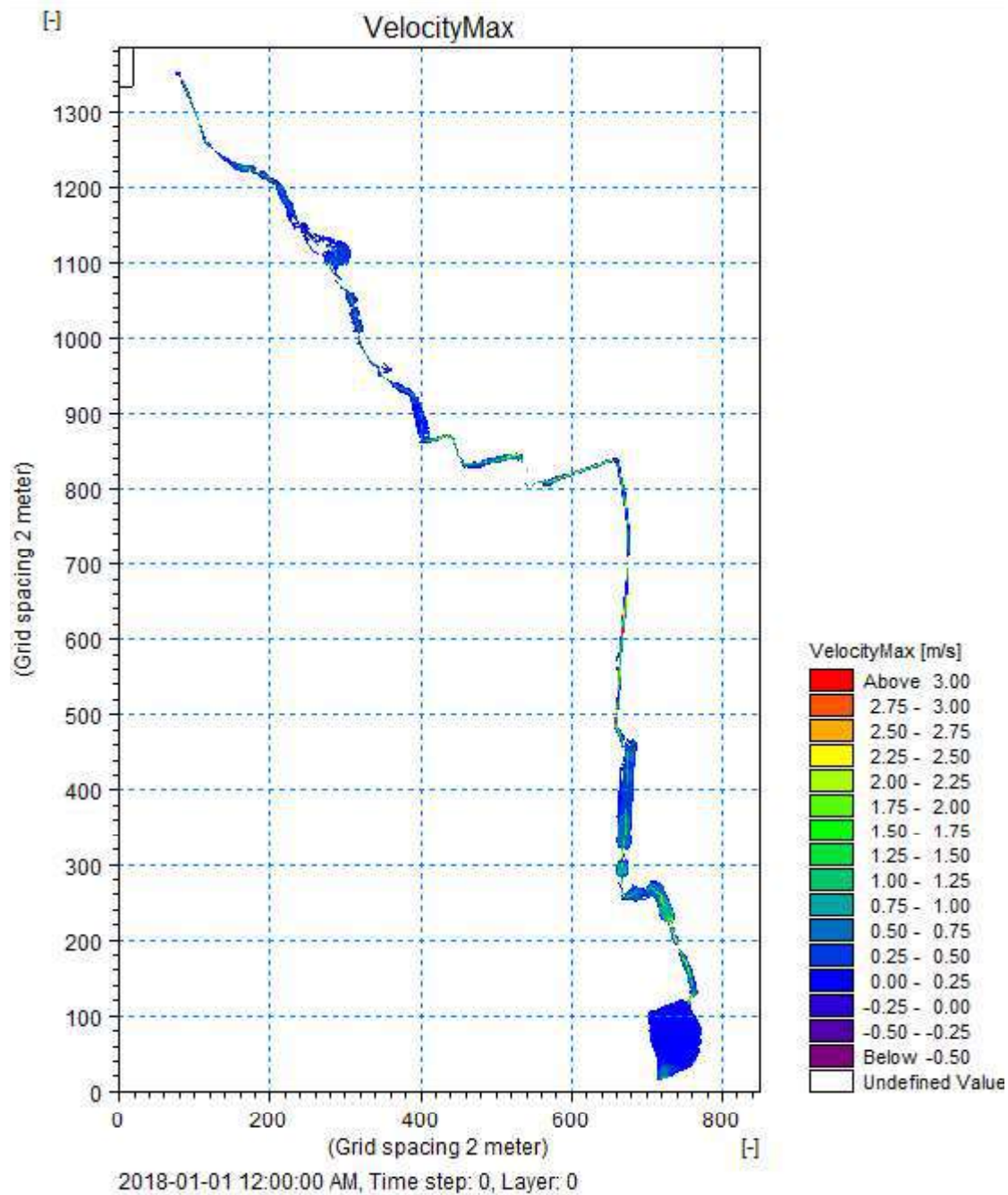


Alternative 4

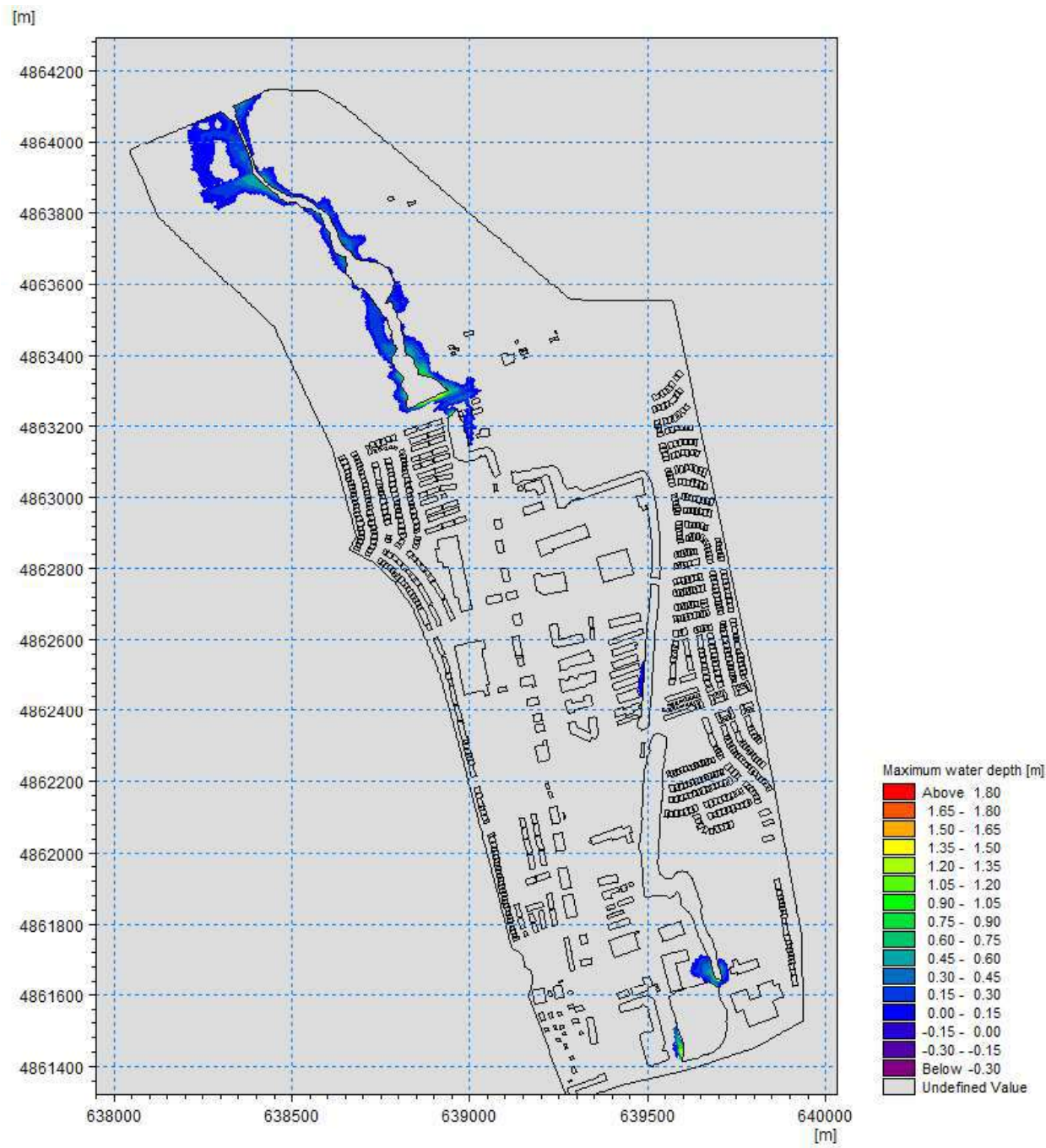
2D Flow velocity



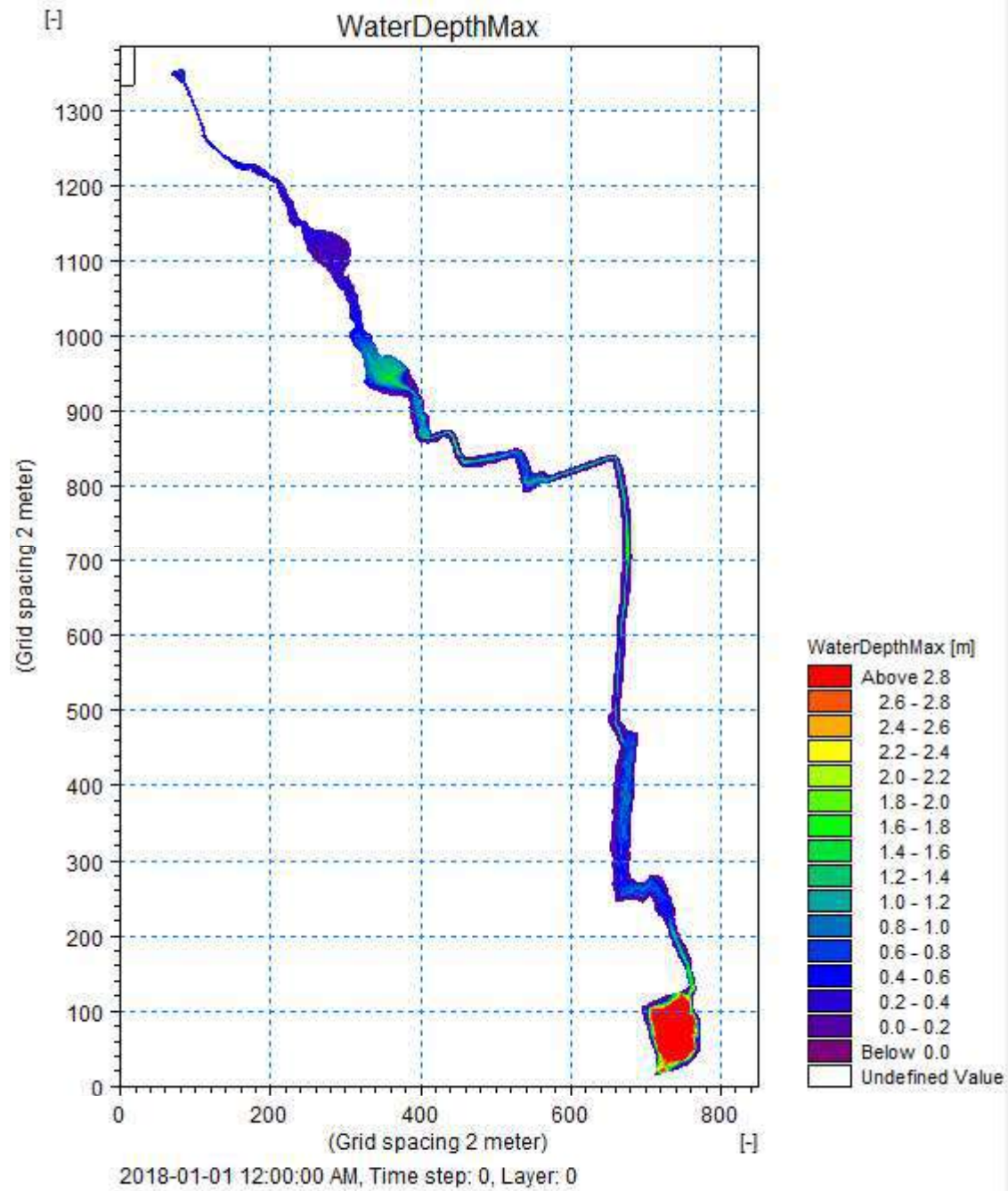
1D Flow velocity



2D Water depth (m)

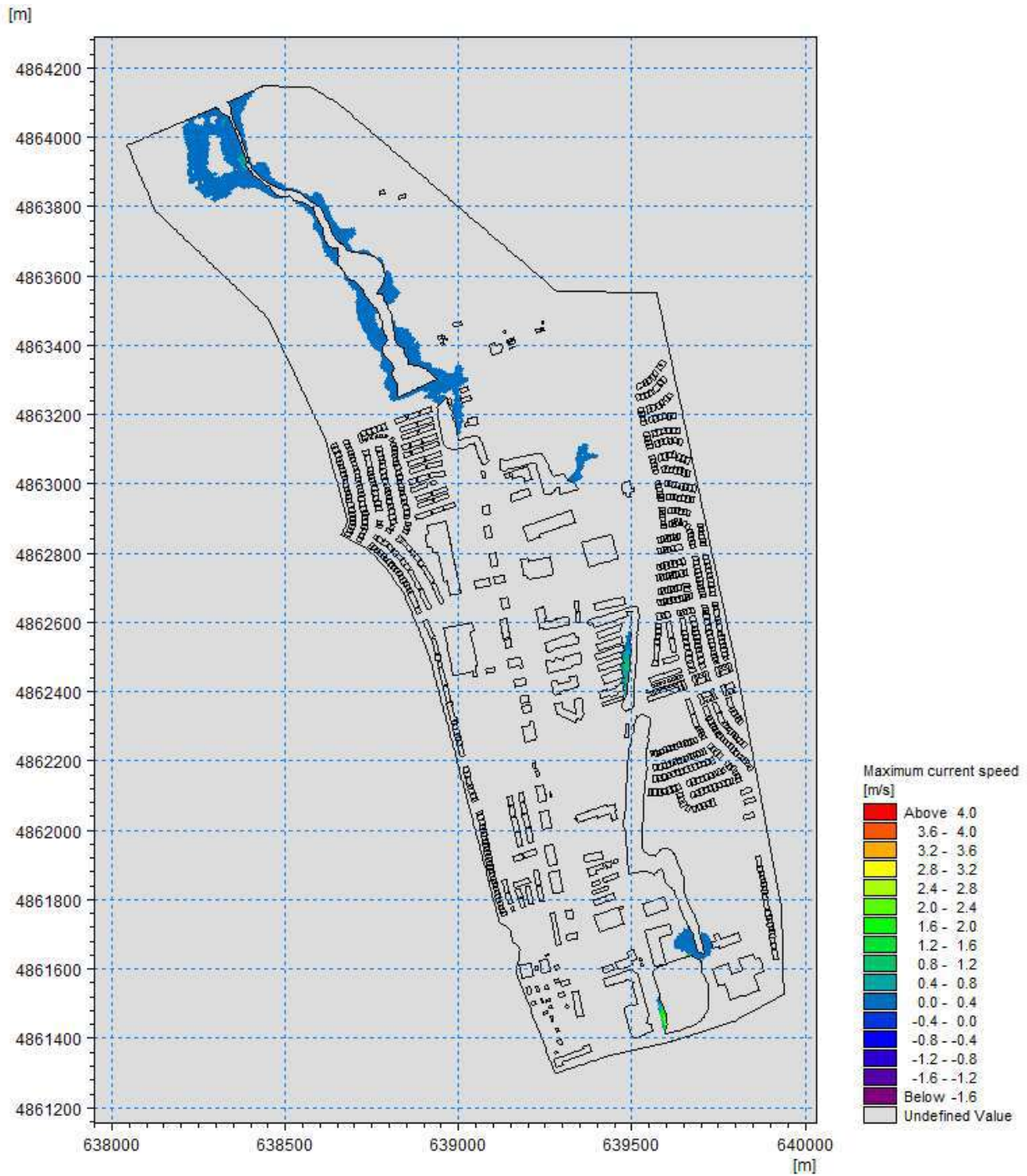


1D Water depth (m)

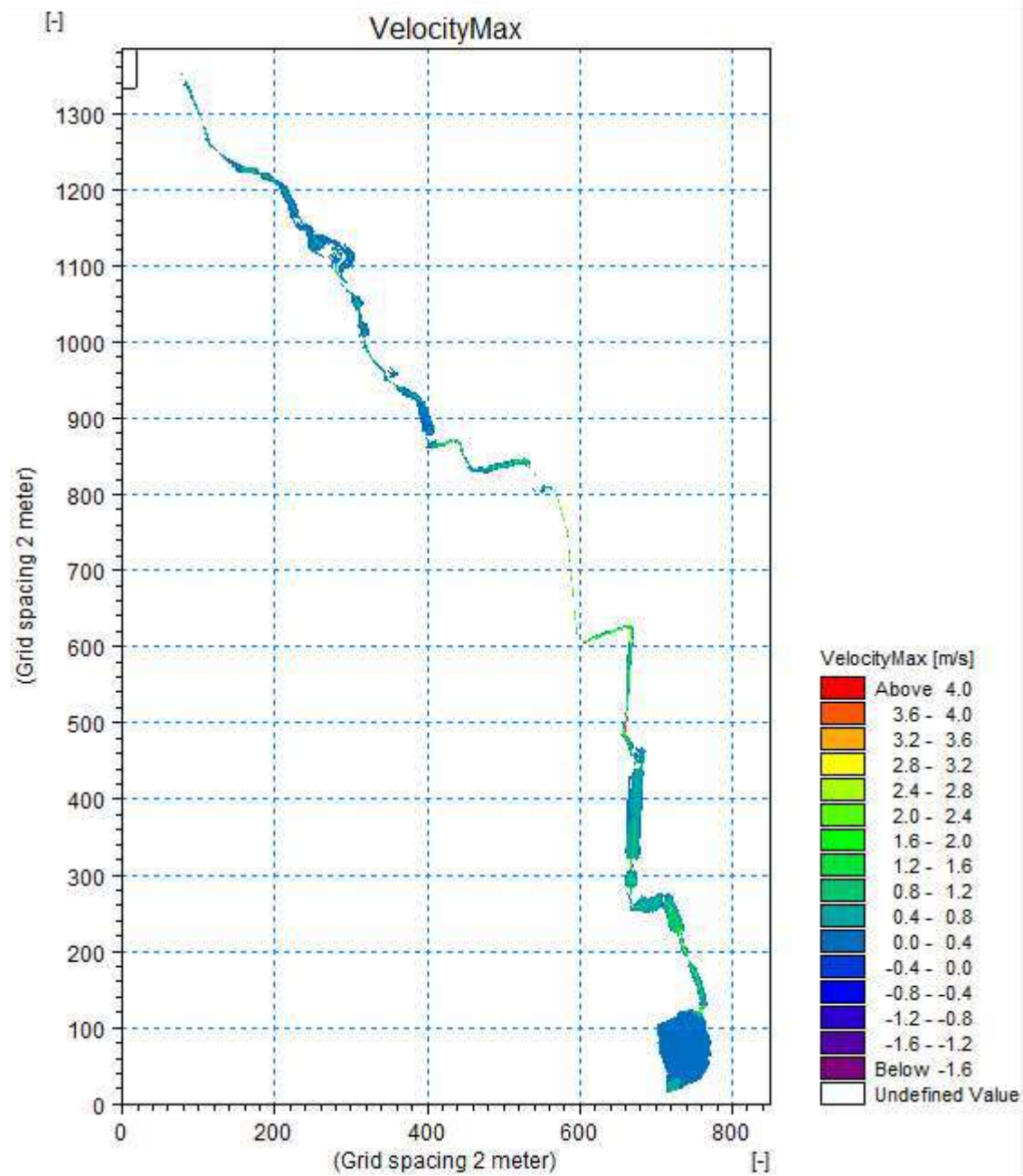


Alternative 5

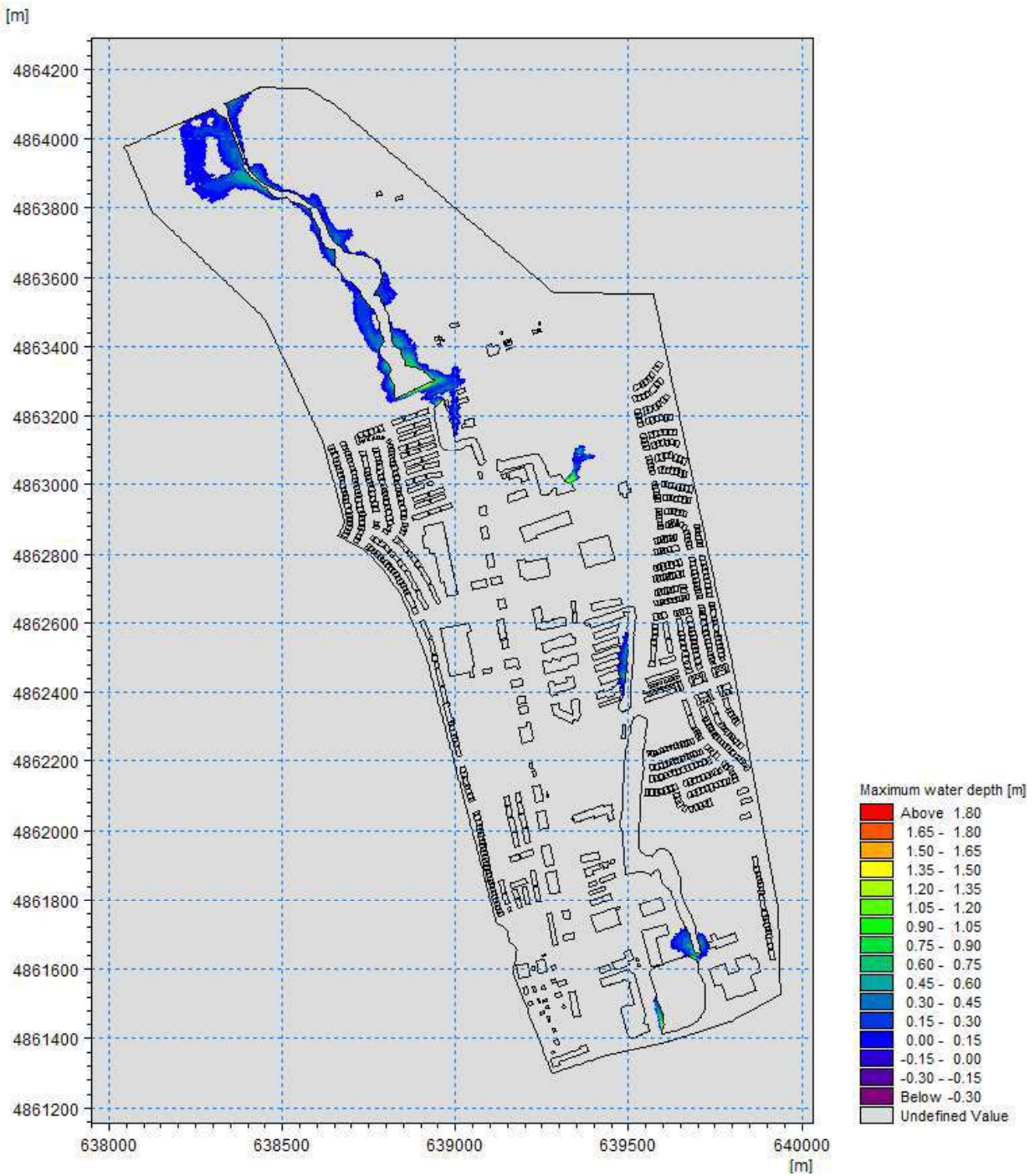
2D Flow velocity



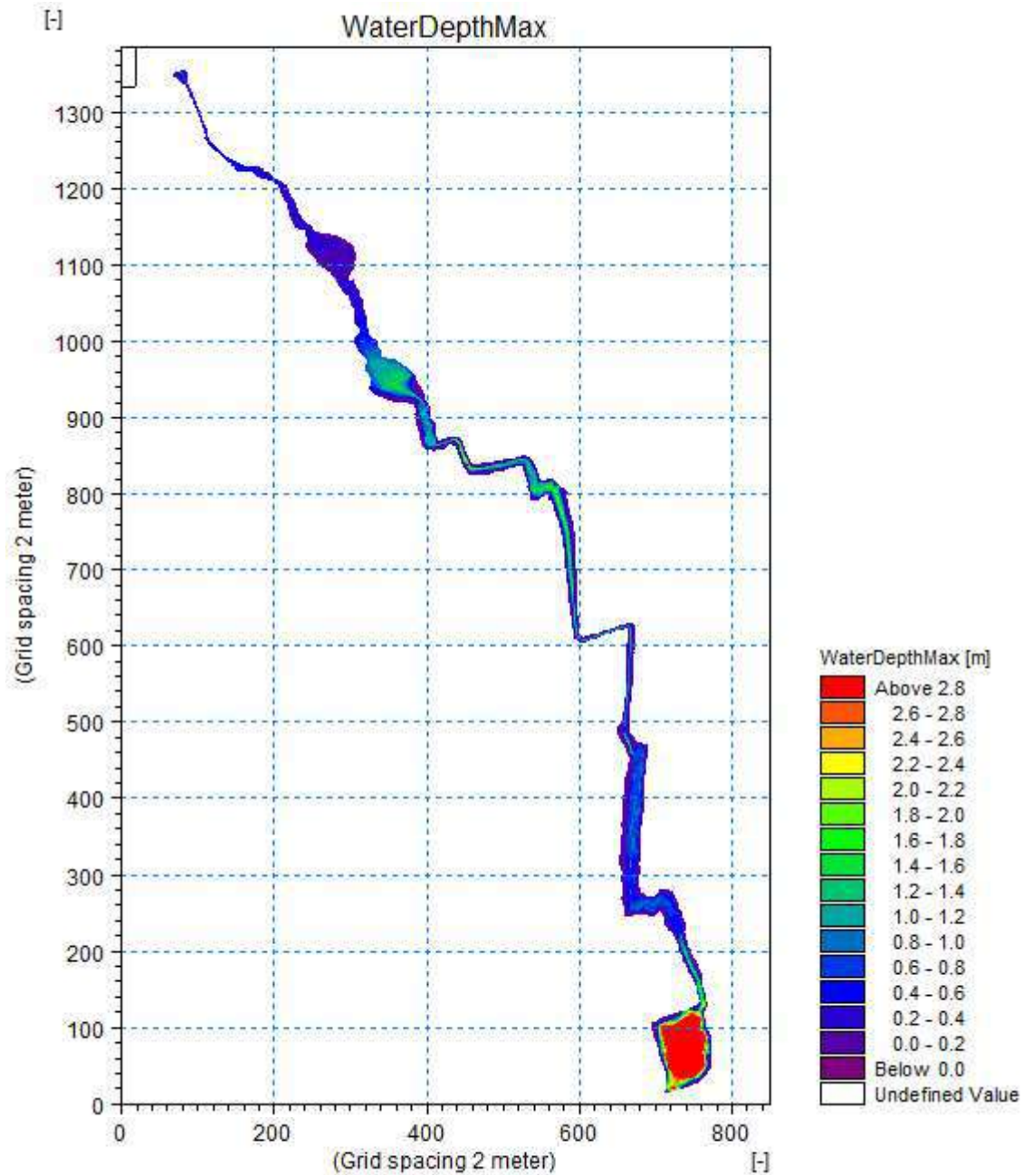
1D Flow velocity



2D Water depth (m)

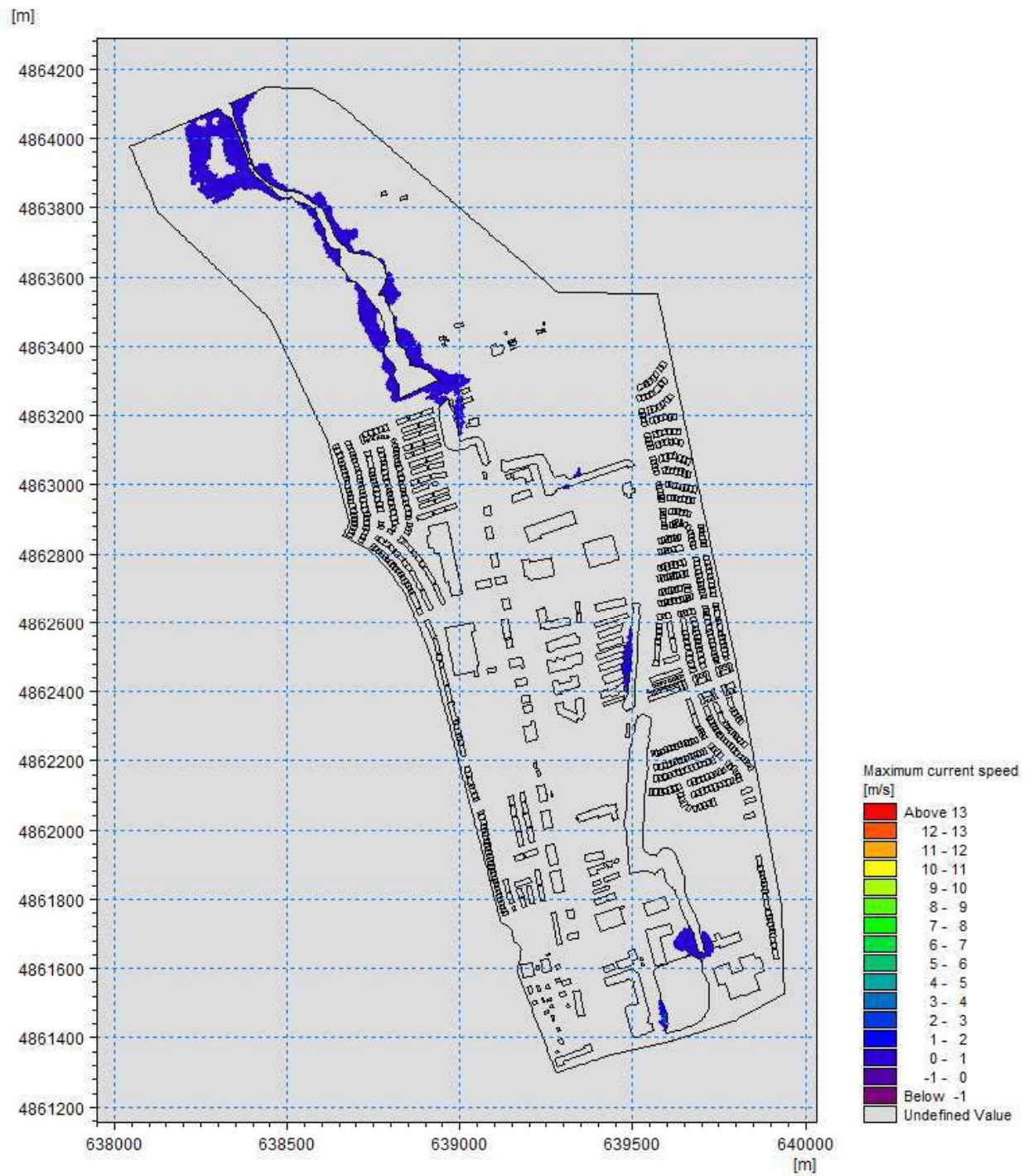


1D Water depth (m)

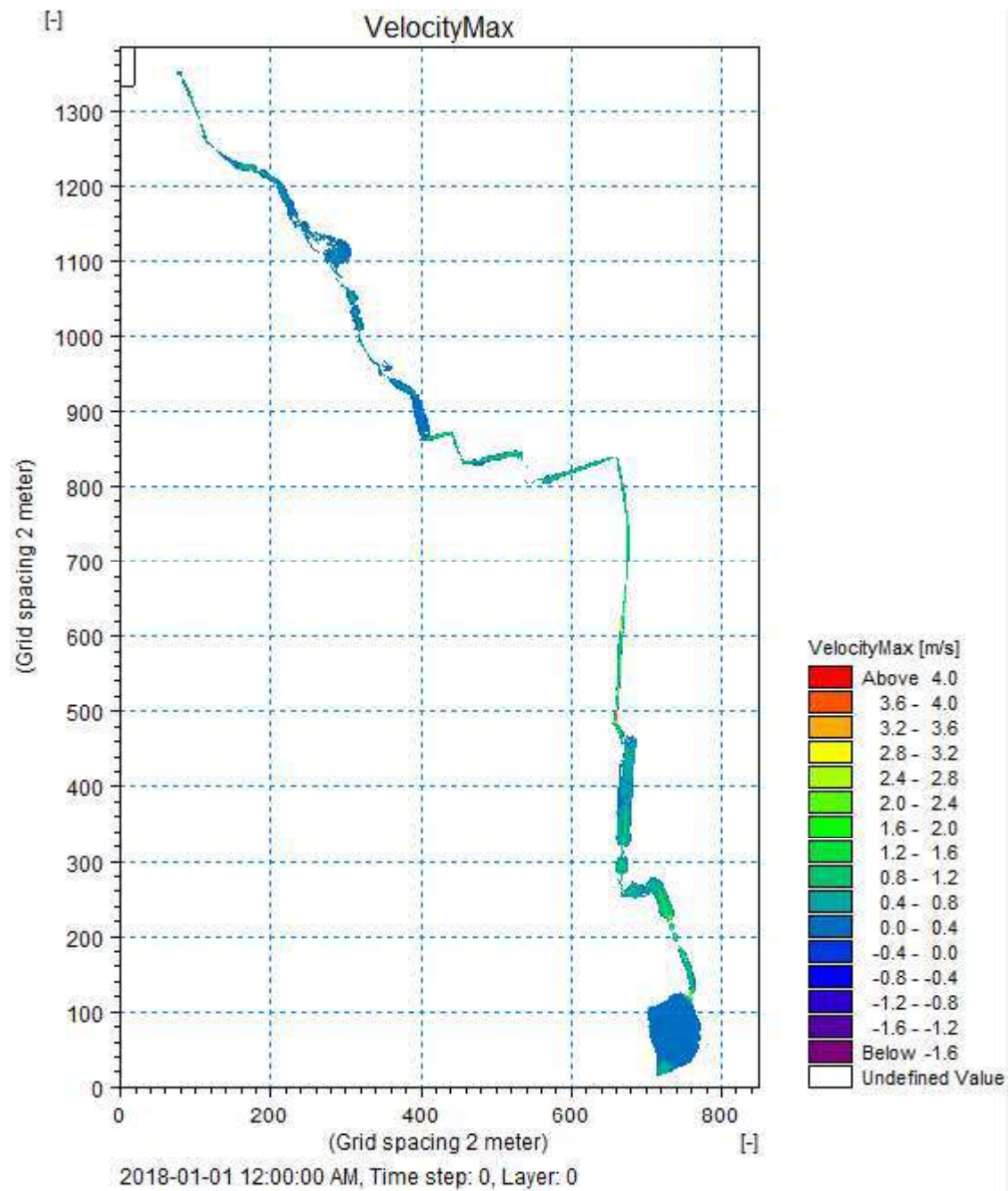


Alternative 6

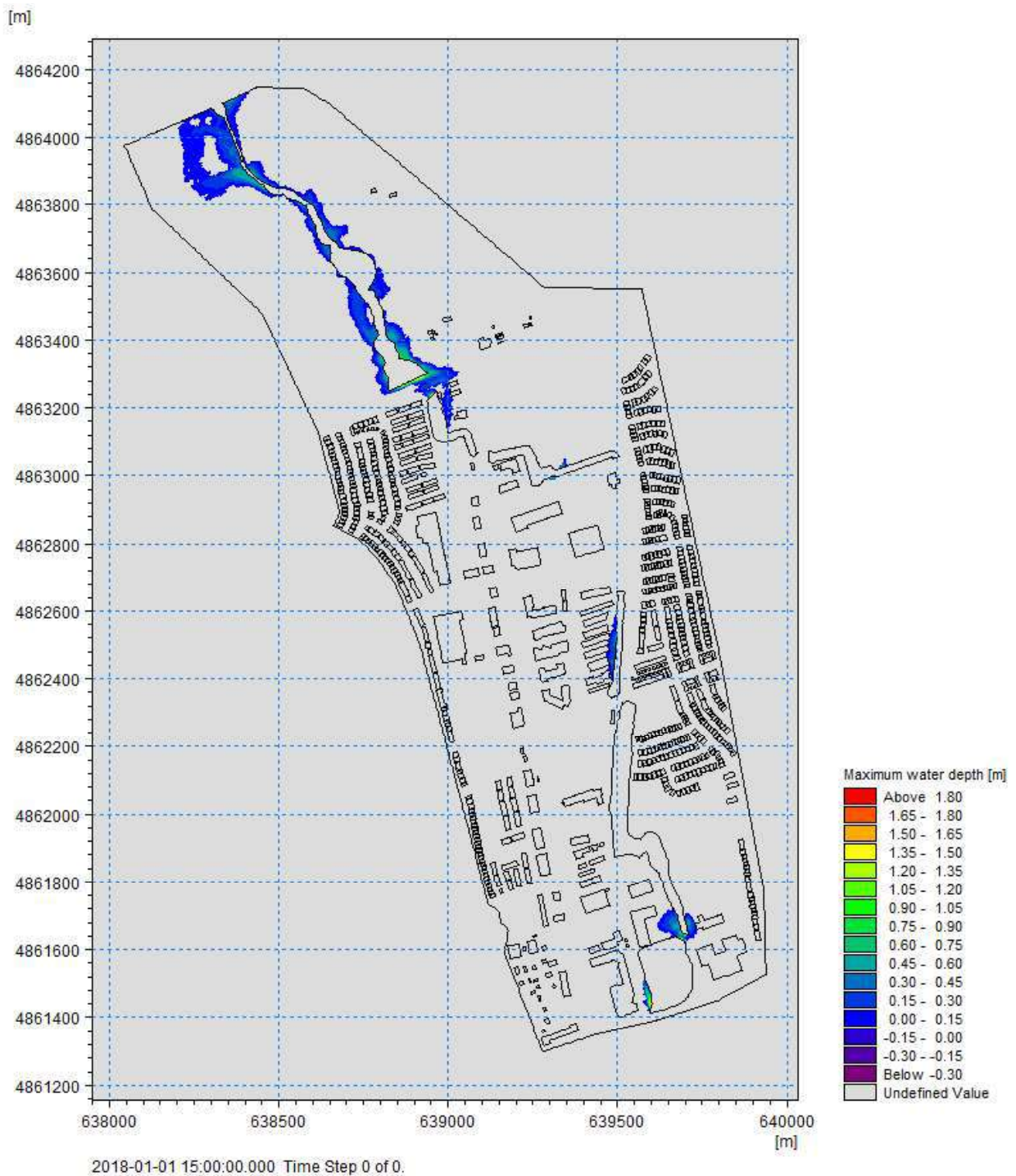
2D Flow velocity



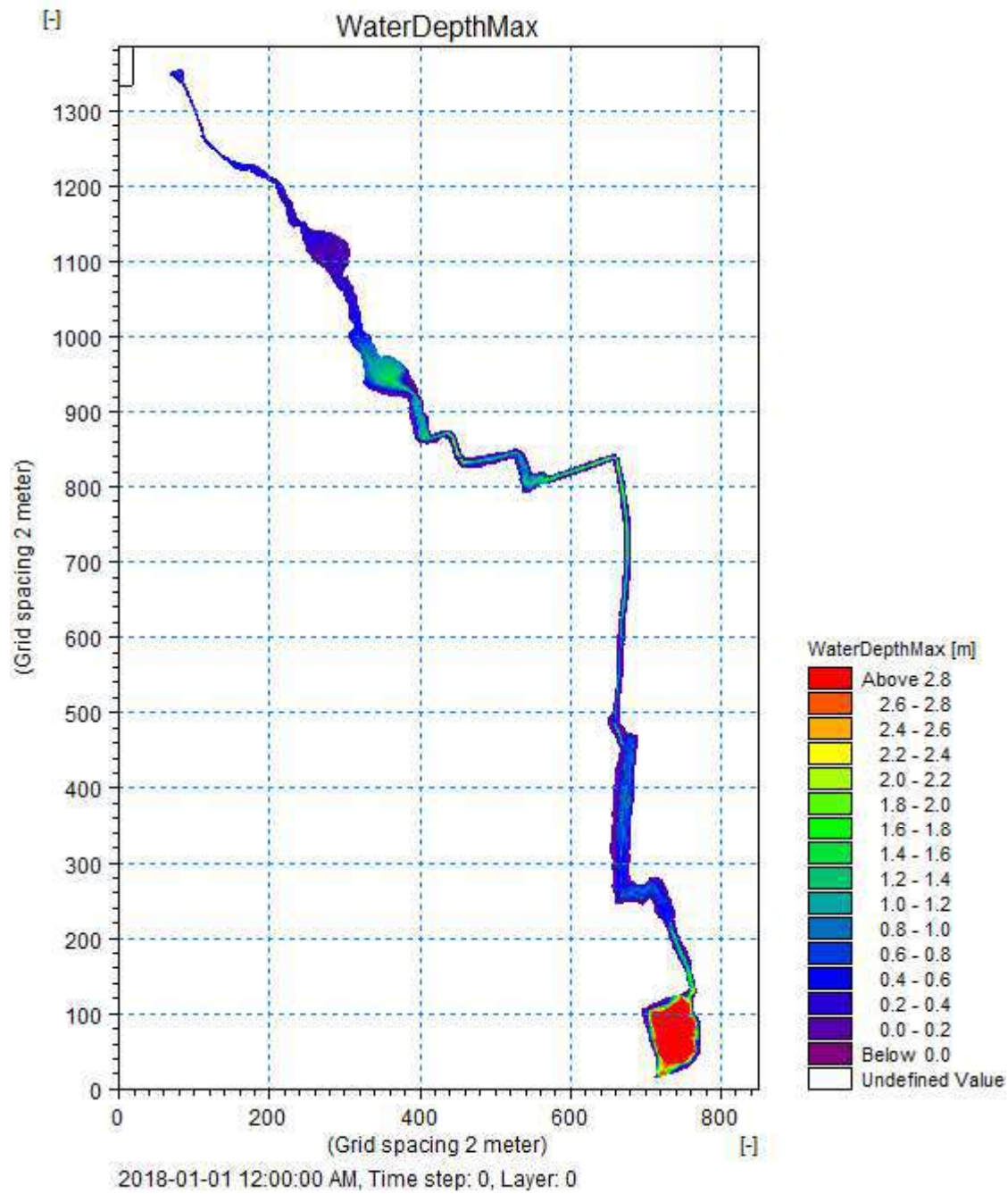
1D Flow velocity



2D Water depth (m)

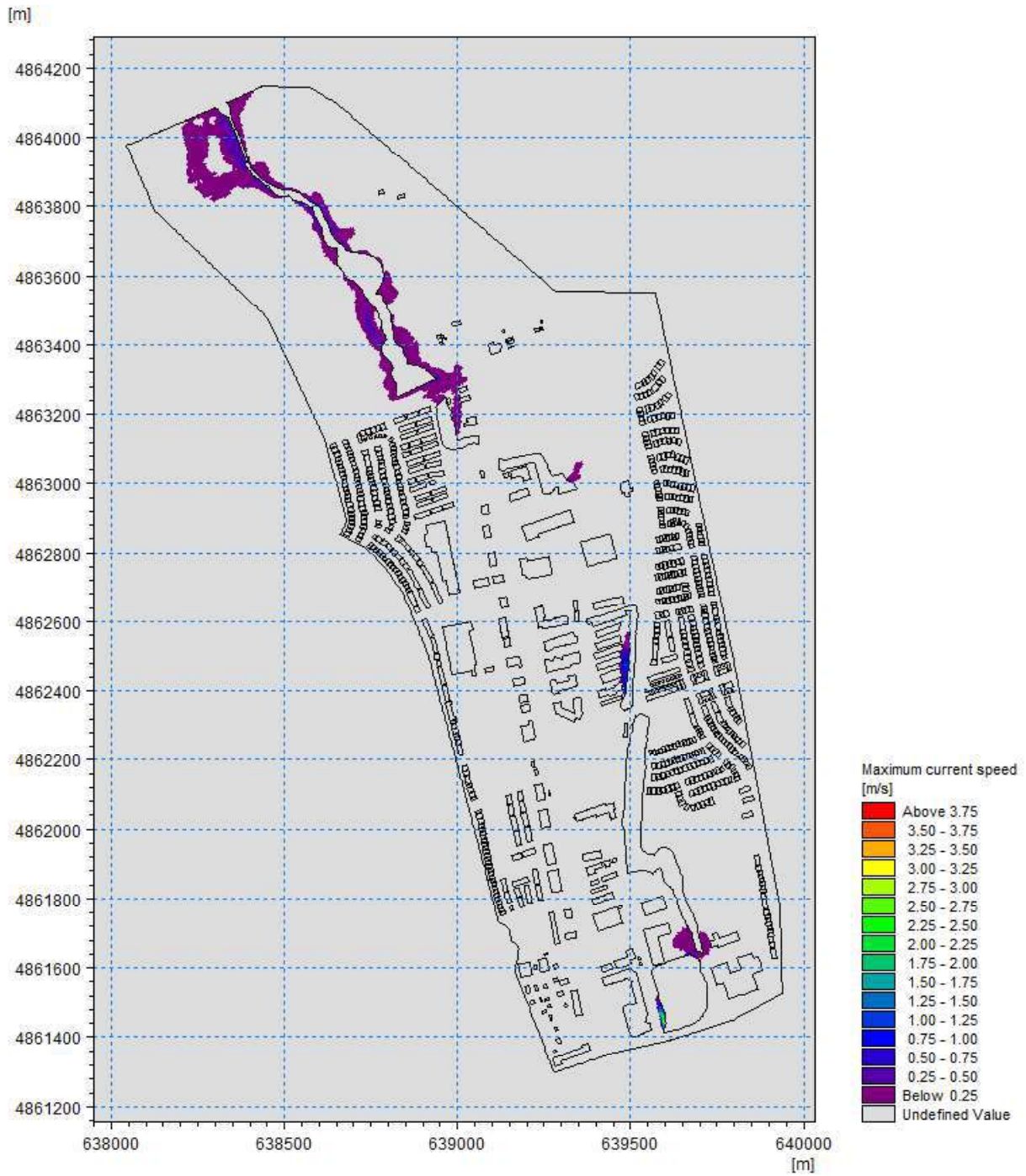


1D Water depth (m)

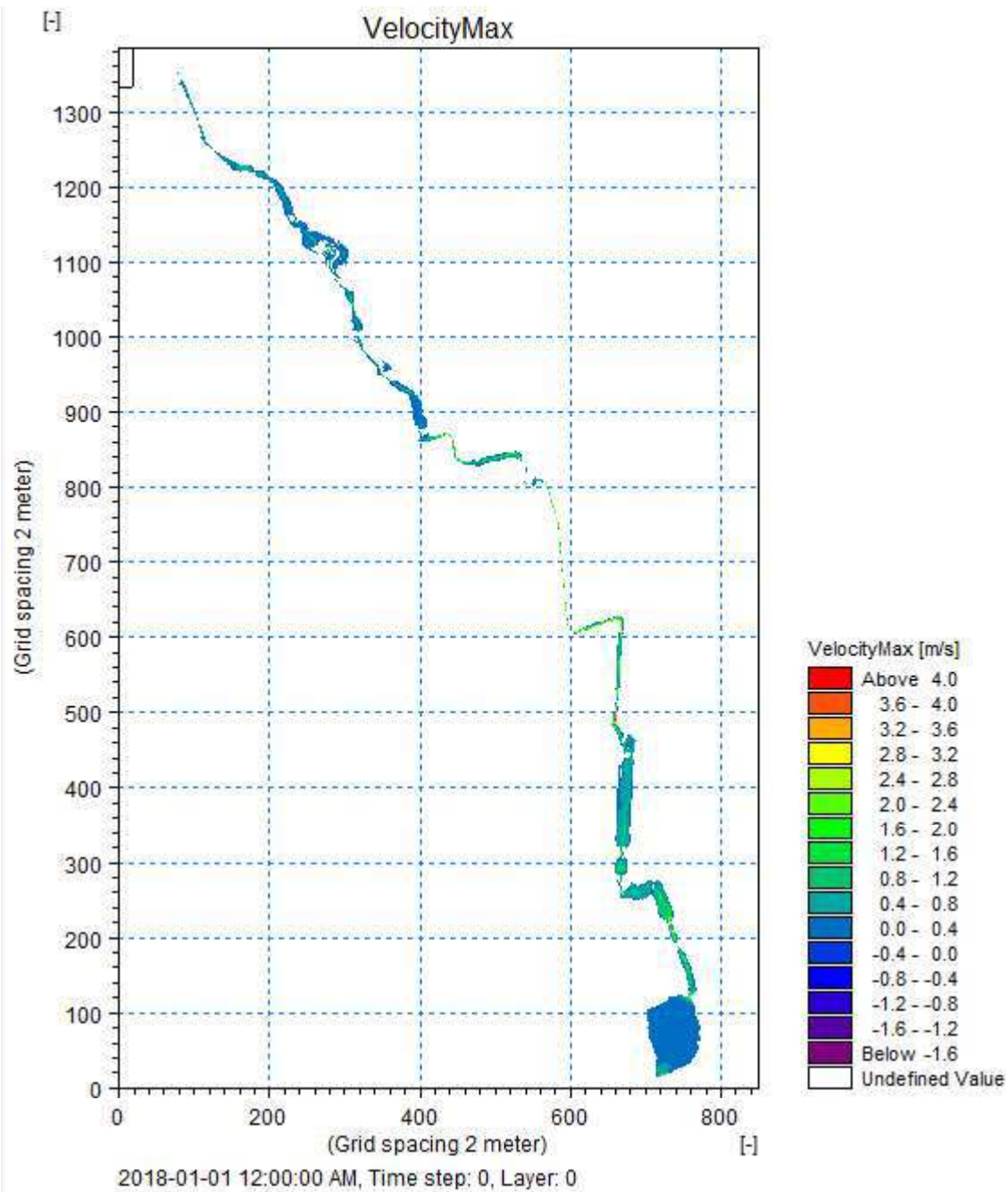


Alternative 7

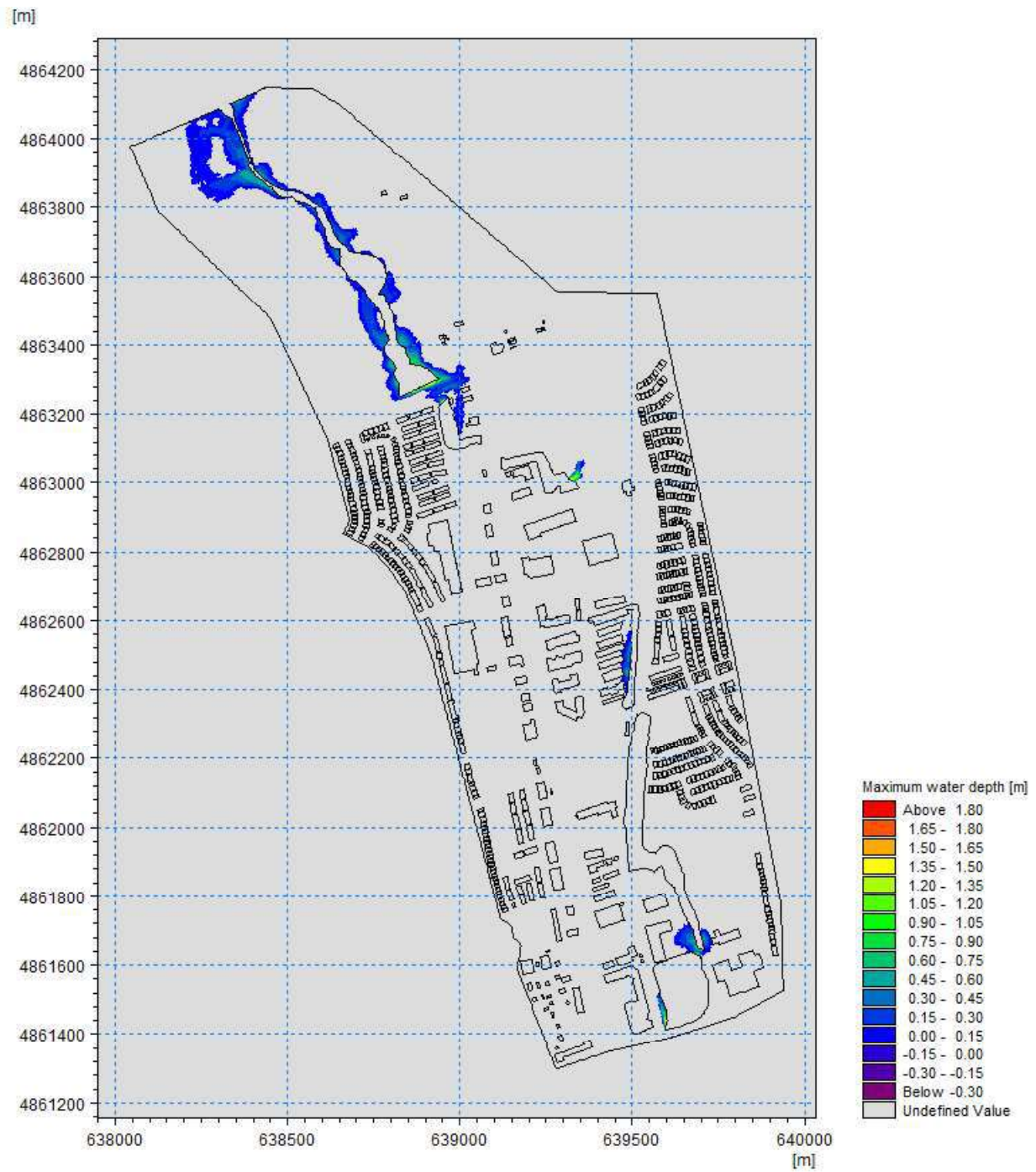
2D Flow velocity



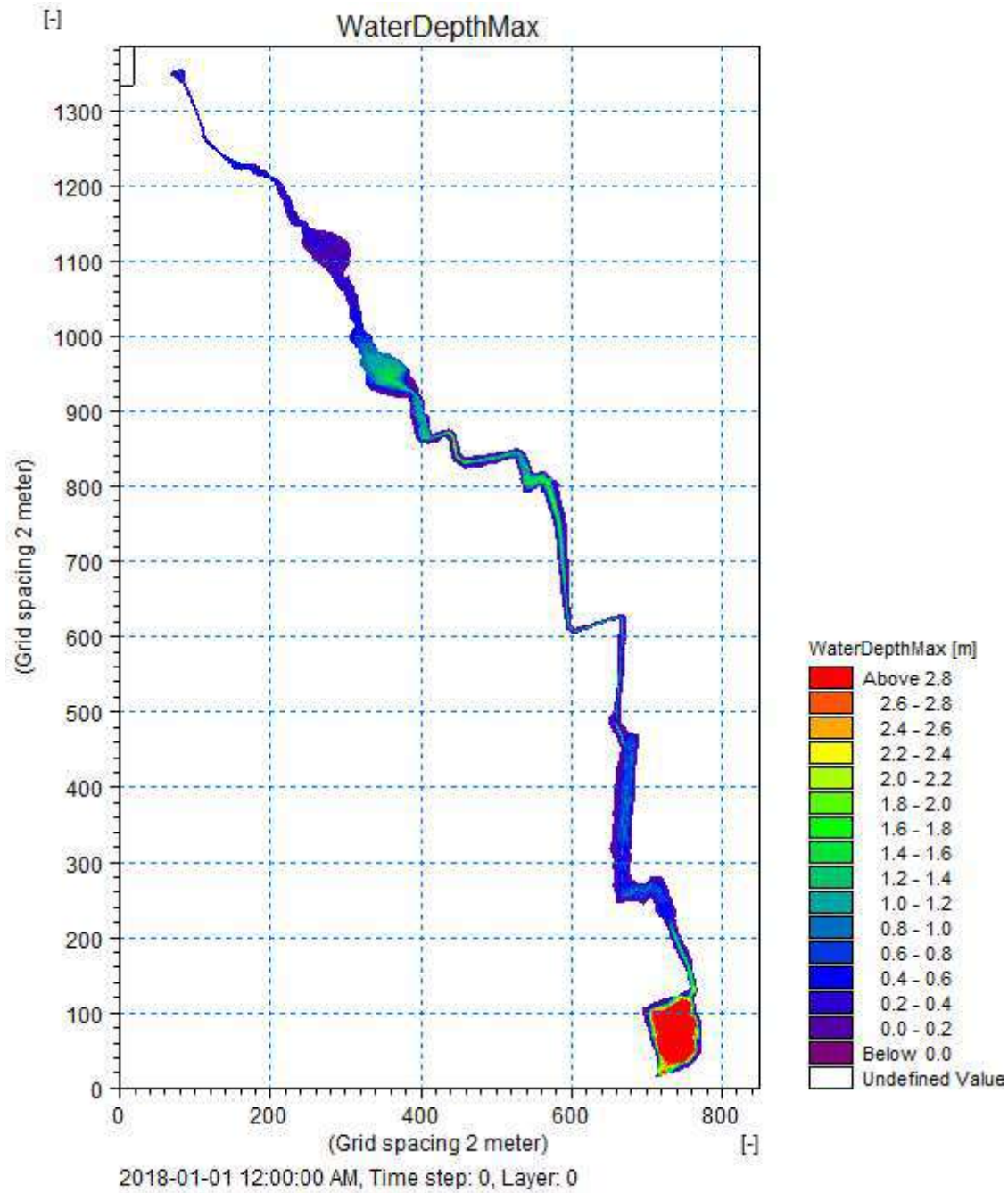
1D Flow velocity



2D Water depth (m)

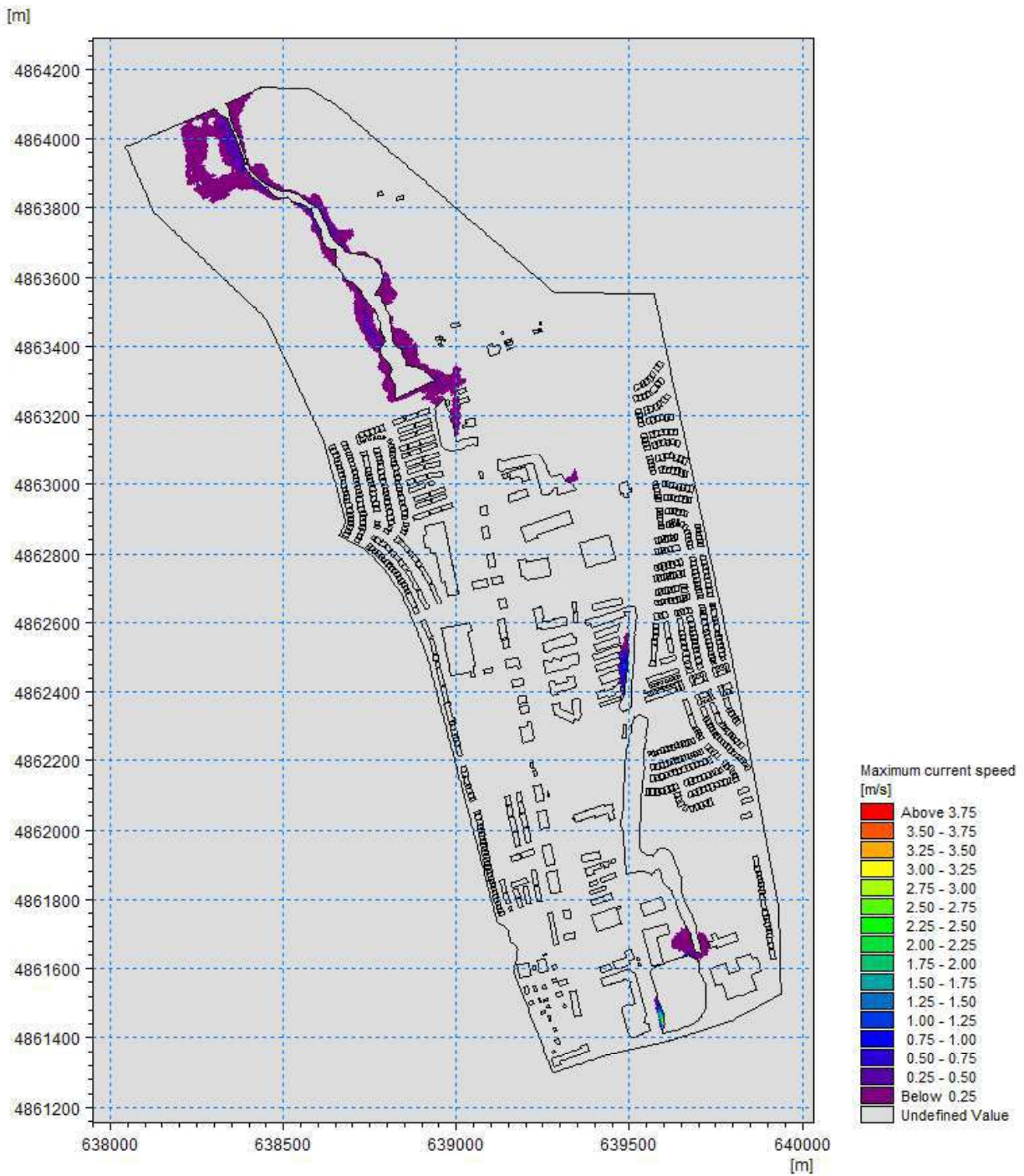


1D Water depth (m)

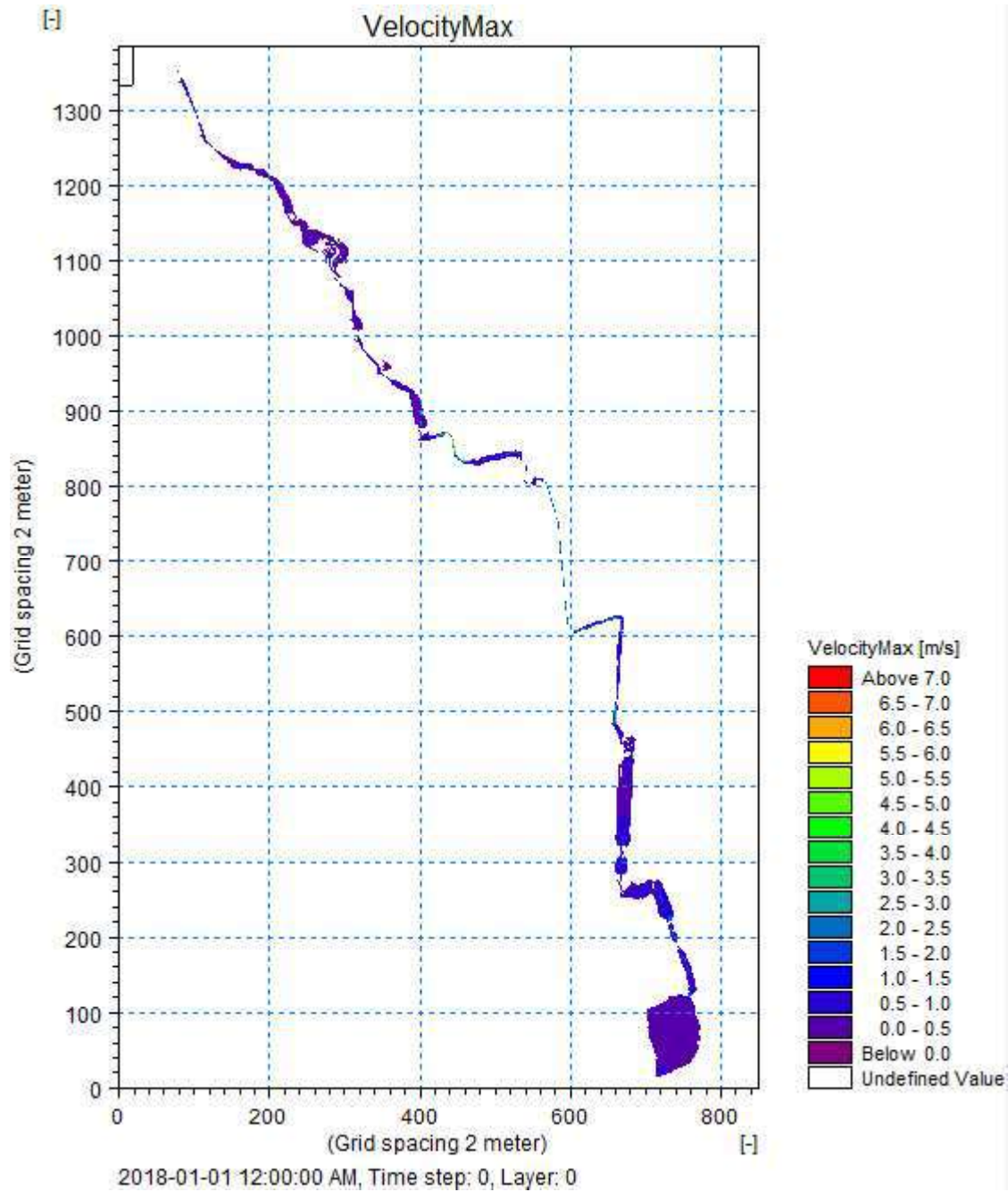


Alternative 8

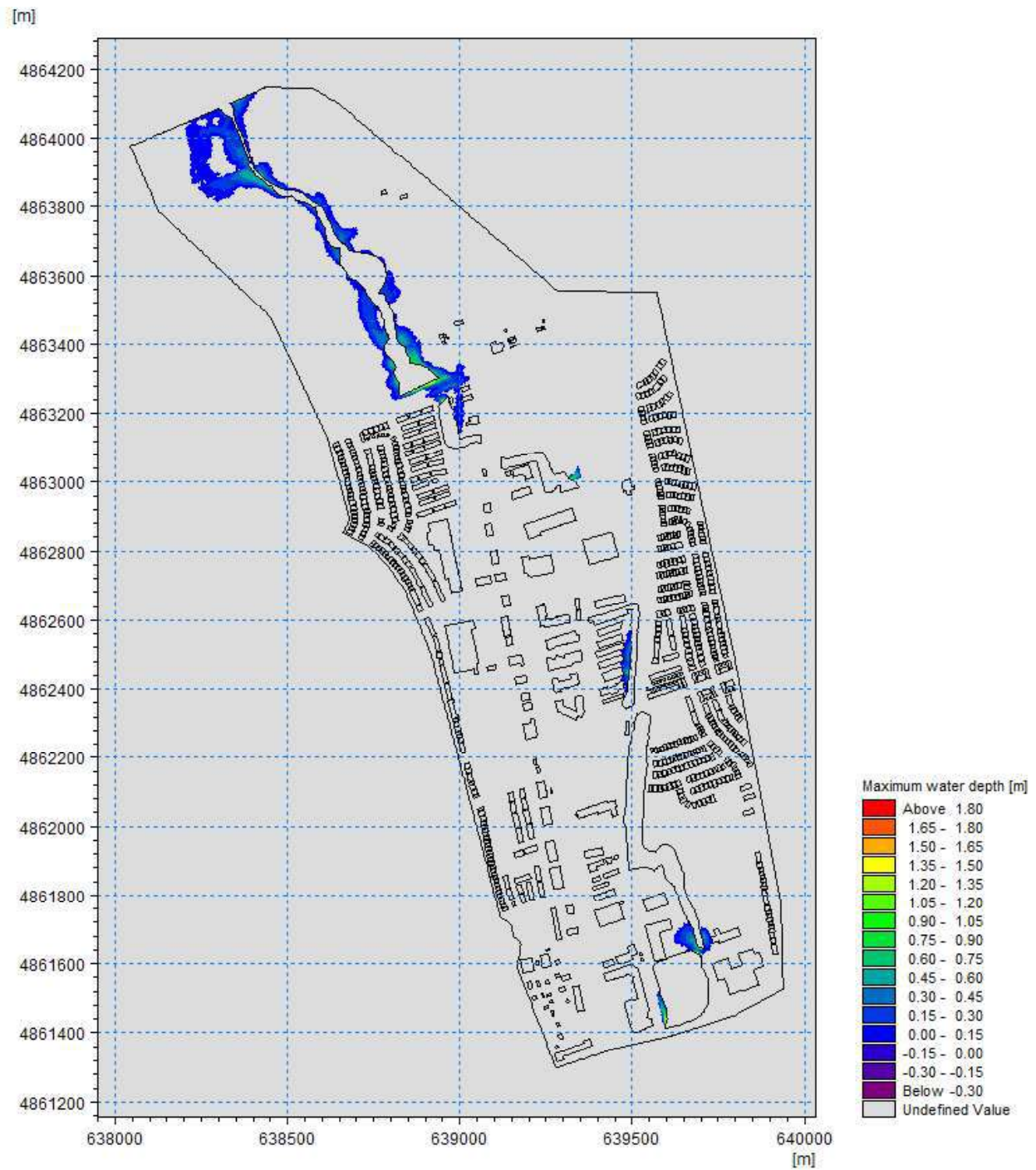
2D Flow velocity



1D Flow velocity



2D Water depth (m)



1D Water depth (m)

