



FME
WORLD TOUR
2019

Applications of FME in the UK Water Industry

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PRESENTATION AGENDA

- 1 Bio
- 2 WSP & Severn Trent
- 3 Dynamic data management
- 4 Delivering intelligence

START



Bio



Bio

- Geographer
- Regulated water industry
- Asset management
- Data management
- Spreading message of FME:
 - WSP UK Community of Practice
 - 3 month secondment to NZ





WSP and Severn Trent

WSP

- Multi-disciplinary, engineering consultancy



The Shard & London Bridge Station, UK



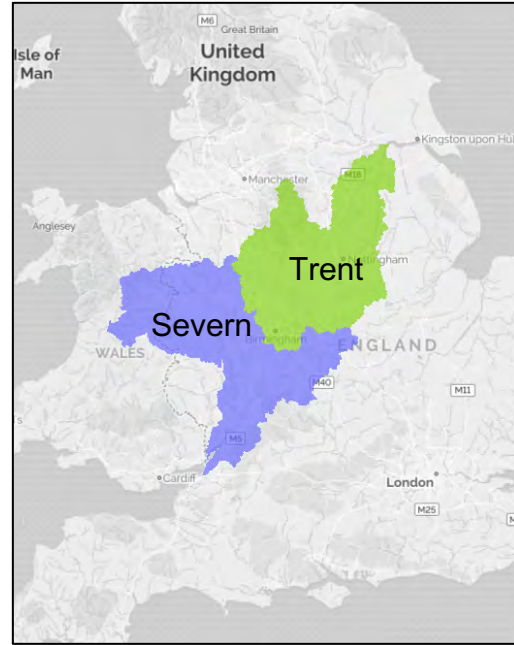
Kaikōura Earthquake Emergency, NZ

- Water infrastructure planning & engineering

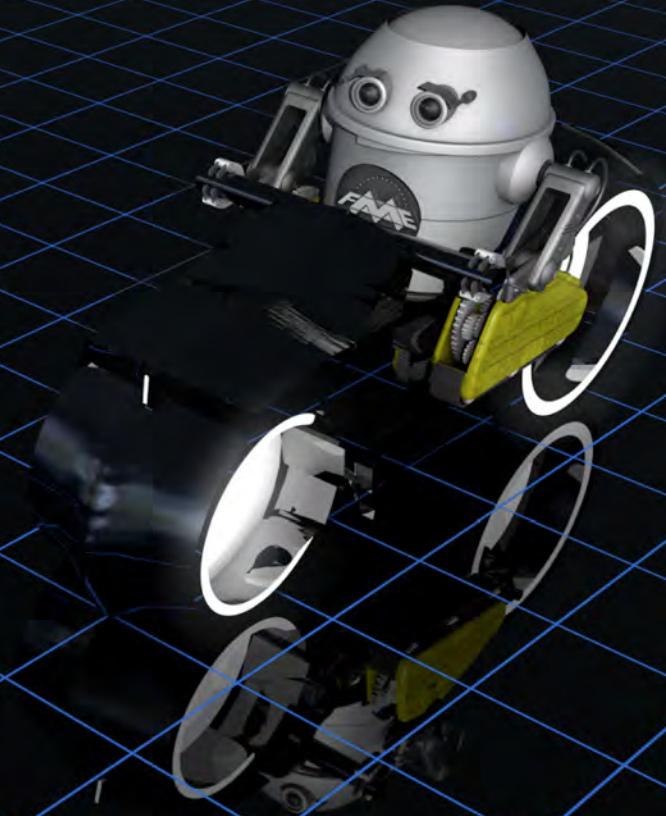


Severn Trent

- Water supply & waste water services
- Population: 11.3M
- Sewerage assets: 1.4M (56,000km)
- £3.3bn capital investment (2015-20)
- Regulated by Ofwat, delivering outcomes.
- Asset Management Plan (AMP) – 5yrs



How can WSP help
Severn Trent achieve
customer, environment
and regulatory
commitments?



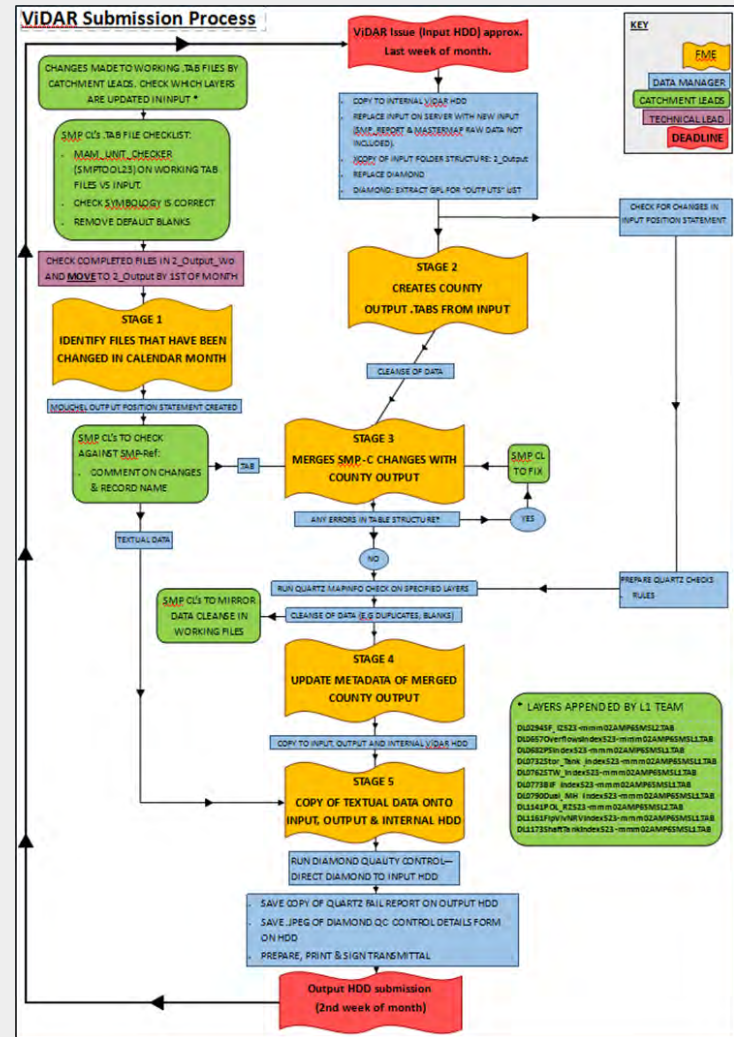


**Dynamic data
management**

Virtual Data Refresh Cycle

How to manage ever-changing data?

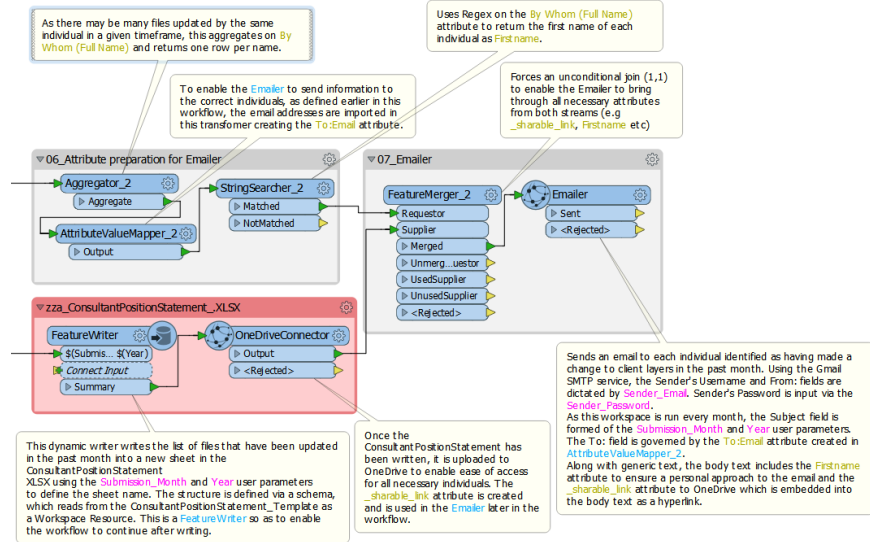
- Identify
- Integrate
- Validate



Identify changes in data: who, what, when

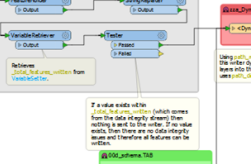
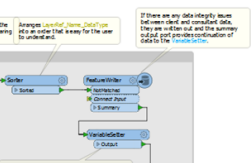
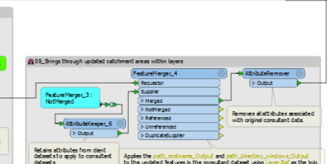
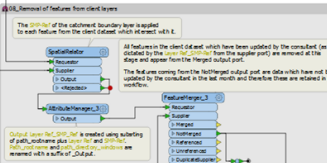
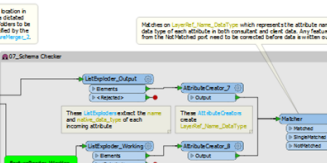
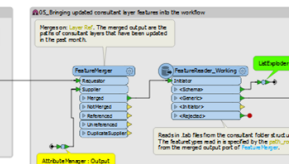
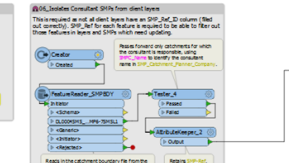
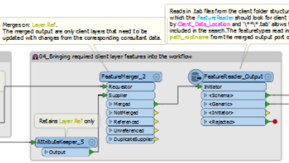
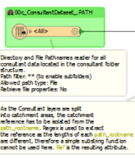
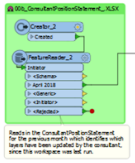
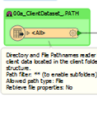
- Writes data changes and uploads to OneDrive

- Merges staff details, enabling Emailer to communicate changes and request more info



Integrate consultant changes into client data

Key
 Refactor
 Additions
 Transform



01_Client Data Attribute Preparation

Desktop and the features ready for all client data loaded in the client layer attribute. (In the enable attribute) Release the properties No

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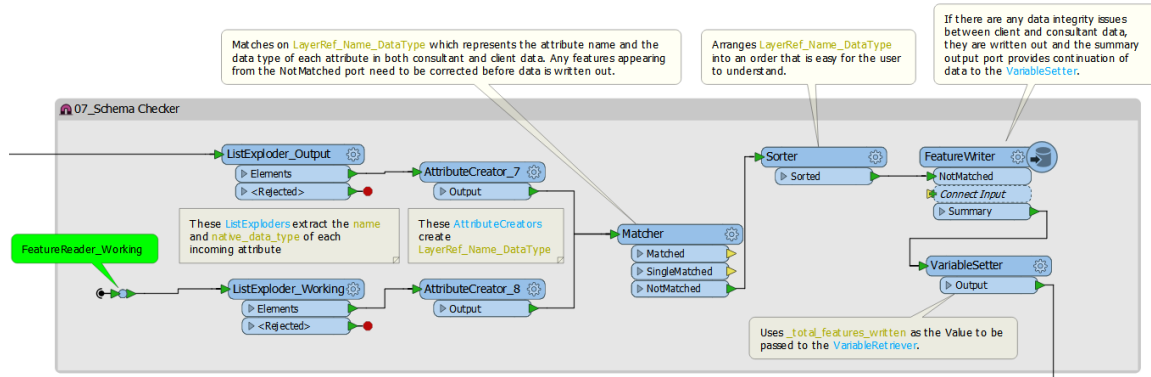
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Integrate consultant changes into client data

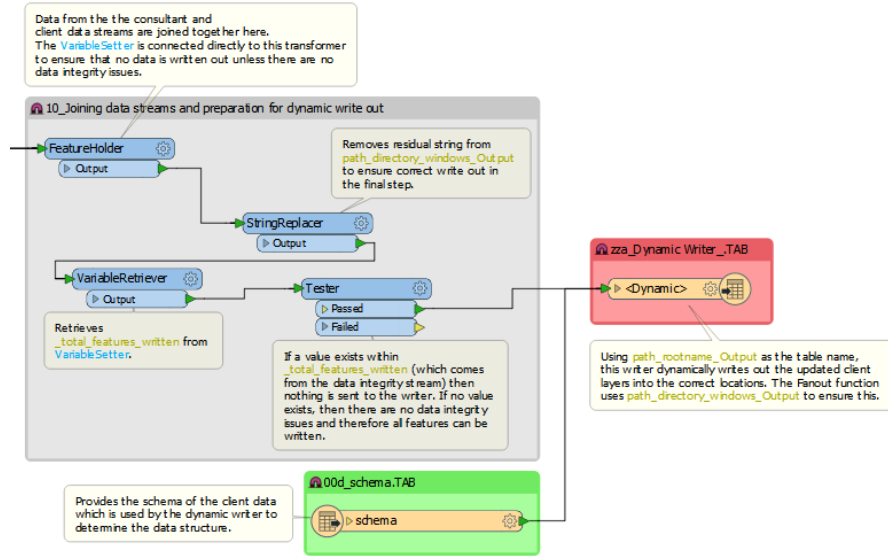


- Compares schemas of consultant vs client data
- Writes list of errors out where applicable
- No. of errors used as `VariableSetter`, passed to writing section



Integrate consultant changes into client data

- Only writes data out where no integrity issues.
- Dynamic writer w/ Fanout to correct location



Validate attributes for spec adherence

The screenshot displays a data pipeline with three main sections:

- 00a_DL0682_SPS_MapInfo TAB**: Contains a data source 'DL0682...6SMSL1' with 479 records.
- 01_Attribute Validation_DL0682_SPS**: A validation stage containing:
 - Counter**: 47 records.
 - AttributeValidator_DL0682_SPS**: The core validation transformer, highlighted with an orange box. It has 218 records passing and 31 records failing.
 - ListExplorer**: 218 records.
 - Aggregator**: 218 records.
 - AttributeCreator_2**: 64 records.
- 00a_DL0762_STW_MapInfo TAB**: Contains a data source 'DL076...SMSL1' with 64 records.
- 02_Attribute Validation_DL0762_STW**: A validation stage containing:
 - Counter_2**: 64 records.
 - AttributeVai...or_DL0762_STW**: The core validation transformer.
 - ListExplorer_3**: 748 records.
 - Aggregator_2**: 64 records.
 - AttributeCreator_3**: 64 records.

An inset window titled **AttributeValidator Parameters** shows the configuration for the 'AttributeValidator' transformer:

- Transformer Name: `AttributeValidator_DL0682_SPS`
- Validation Rules Table:

Attributes to Validate	Validation Rule	Rule Configuration
OperationalDAP_Ref_ID_T...	Type	String
X_Coord_Rising_Main_Ris...	Type	Numeric
Operational_X_Coord(DA...	Has a Value	<Unused>
TAG_Ref_ID_SAP_Floc_ID	Unique	<Unused>
X_Coord	In Range	[280500,497000]
Y_Coord	In Range	[1180500,430200]
TAG_Ref_ID_EO_Conse...	Maximum Length	15
STC_Ref_ID	Maximum Length	10
DAP_Ref_ID	Maximum Length	8
Telemetry_Ref_ID_SMP_Re...	Maximum Length	7
STAR_PS_ID	Maximum Length	25
PS_Sharepoint_File_Lin...	Maximum Length	254
AD_ADDRESS	Maximum Length	120
Operational_Mod_Overi...	Maximum Length	9
Modelled_Is_there_an_Ov...	Maximum Length	3
Coord_Source	Maximum Length	21
Operational_Mod_Overi...	Contains Regex	^(?!.*b B b B).*\$
AD_ADDRESS,Modelled,T...	Contains Regex	^(?!.*b B A B).*\$
Modelled,Operational_M...	Contains Regex	^(?!.*b B N b).*\$
OperationalDAP_Ref_ID_T...	Contains Regex	^(?!.*b B N b).*\$

- Potentially 100,000k attributes to QA

2019-05-08 09:00:15 | 1.7 | 0.0 | INFORM | FME Session | Duration: 1.9 seconds.





80%

...efficiency saving: time and cost.

Removes laborious activities from workforce.

Ensures QA and adherence to client spec.

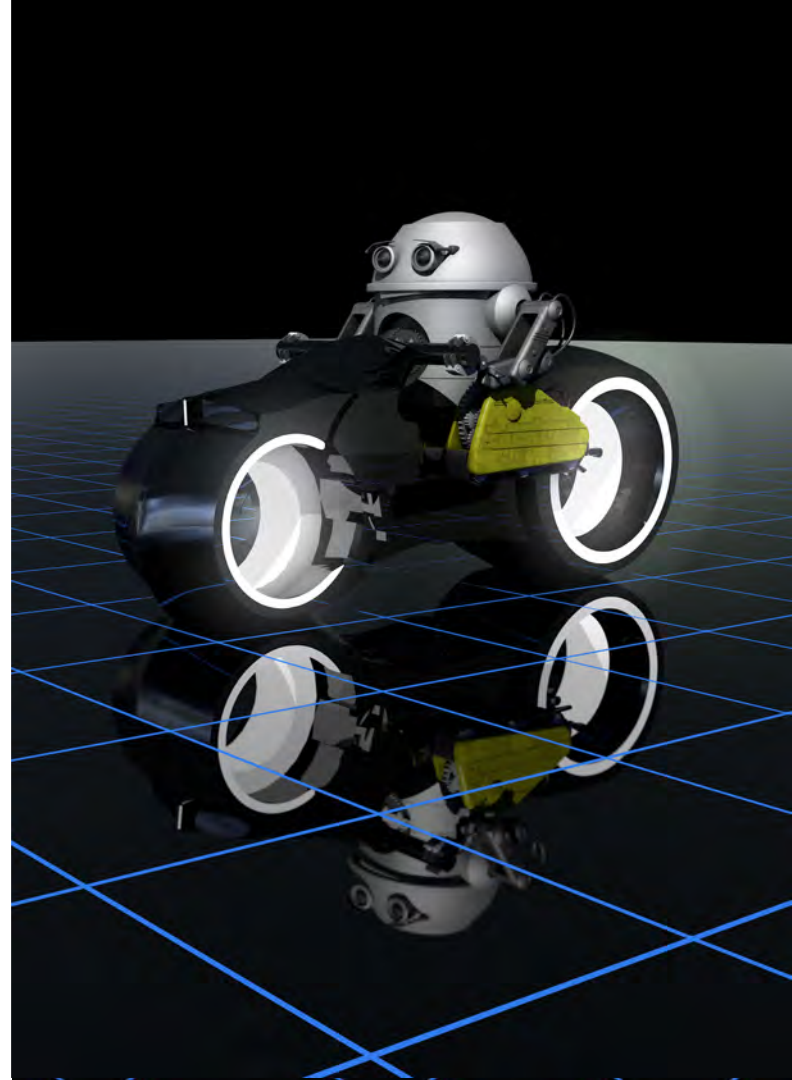
Enables time to think smarter!



Delivering Intelligence

A need to prioritise investment

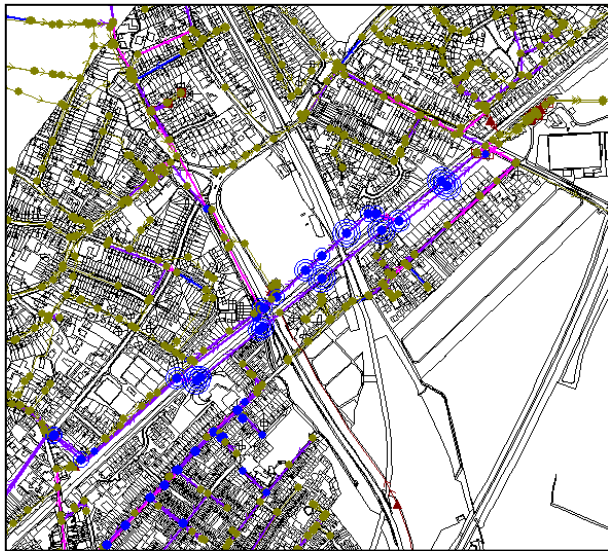
- Maintain network serviceability
- ‘We will safely take your wastewater away’
- Target high consequence of service failure





£20m

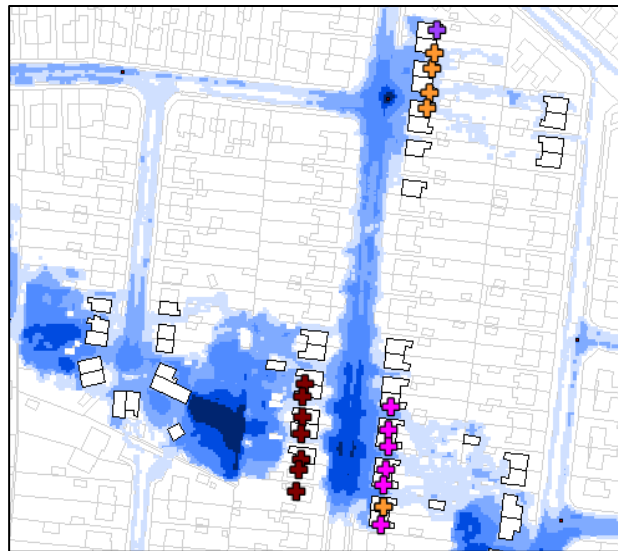
Thames Water pollution fine in 2017.



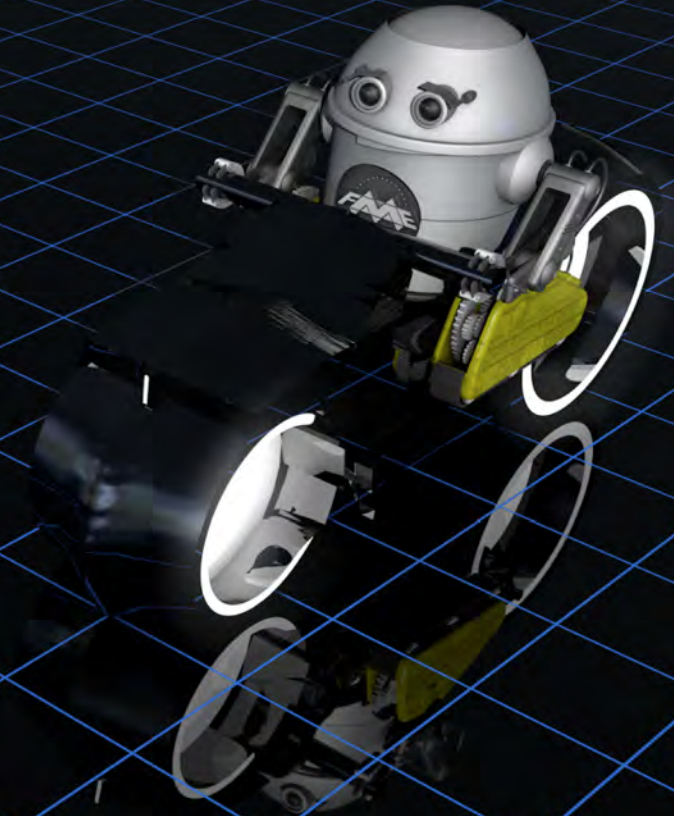
A) 1D flood volume output from hydraulic model



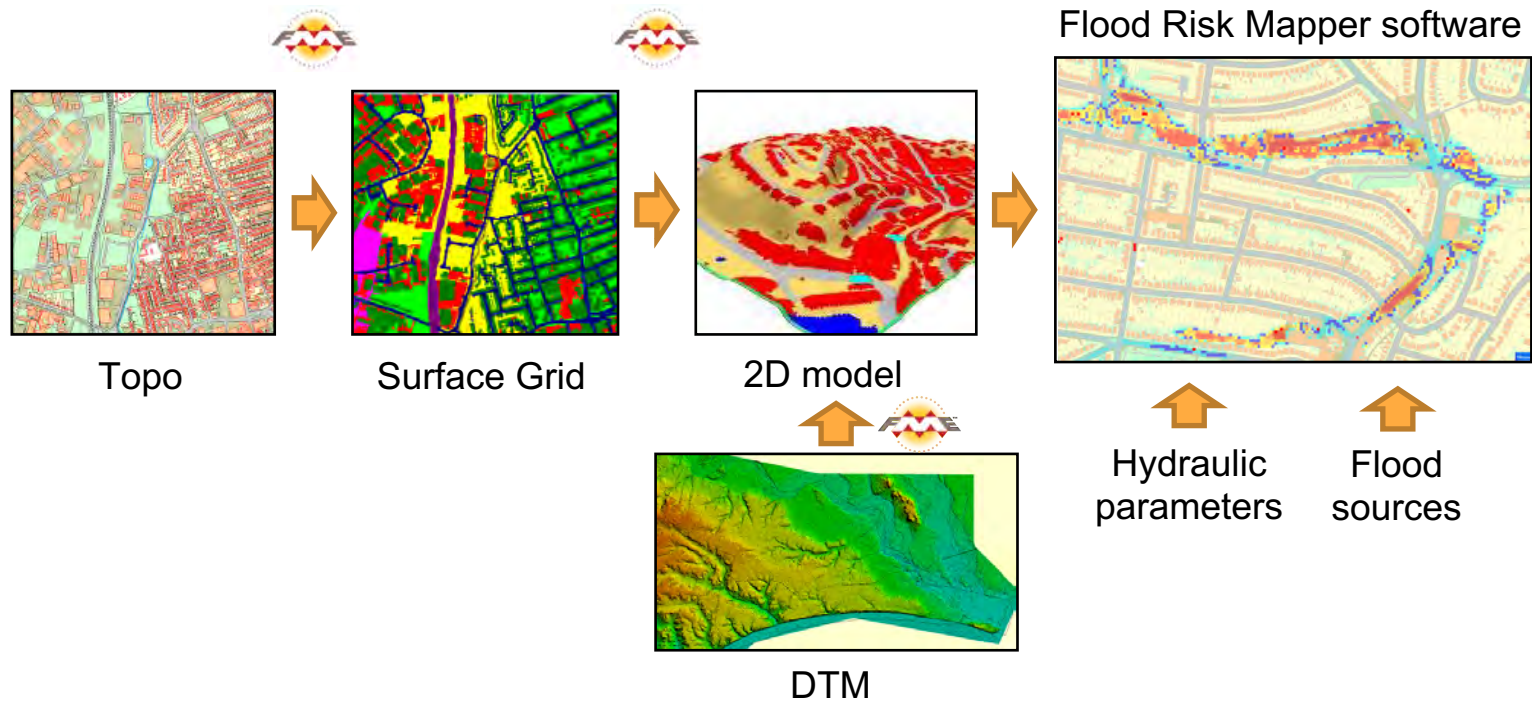
B) 2D representation of flow paths and depths, predicting detriment



How do we get from
A to B?



An irreplaceable tool: Pre-process

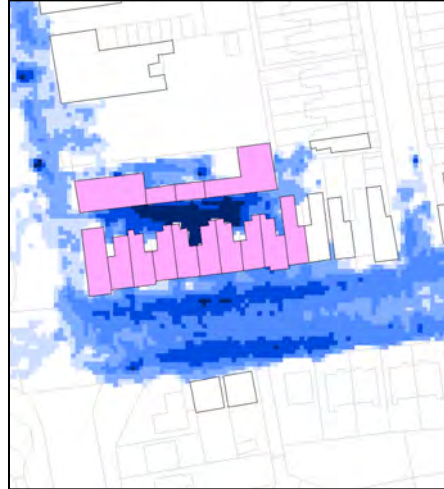


An irreplaceable tool: Visualisation

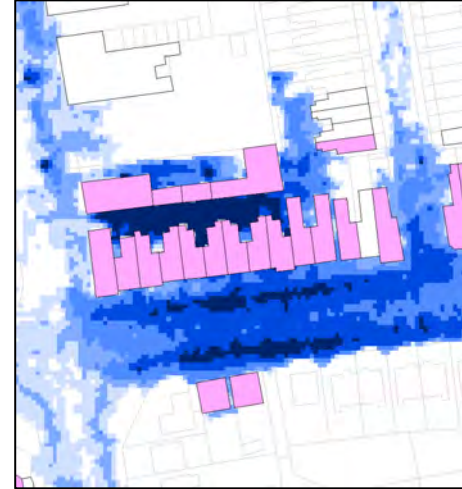
1 in 1 Year rainfall event



1 in 10 Year rainfall event



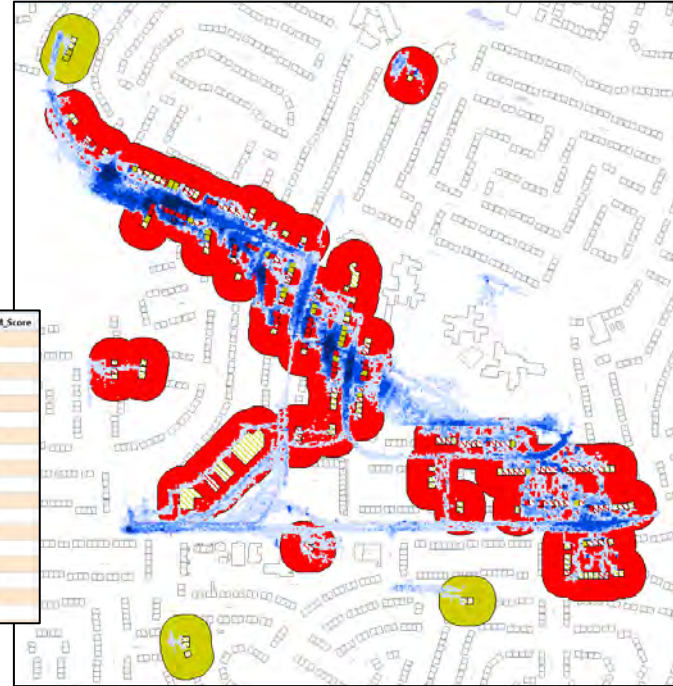
1 in 40 Year rainfall event



Strategic Planning

- Identify predicted flooding 'clusters' to target capital investment at strategic level.

Predicted_I_1	Predicted_I_2	Predicted_E_1	Predicted_E_2	Predicted_E_1_ST4	Predicted_E_2_ST4	I_1_Score	I_2_Score	E_1_Score	E_2_Score	E_1_ST4_Score	E_2_ST4_Score	Total_FRM_Score
105	107	29	101	85	52	256.62	81.855	19.111	17.574	56.015	9.048	440.223
55	123	68	94	172	152	134.42	94.095	44.812	16.356	113.348	26.274	429.305
88	75	78	118	3	1	215.072	57.375	51.402	20.532	1.977	0.174	346.532
77	94	40	76	58	35	188.188	71.91	26.36	13.224	38.222	6.09	343.994
47	88	148	243	0	0	114.988	67.32	97.532	42.282	0	0	322.002
69	78	105	125	0	0	168.636	59.67	69.195	21.75	0	0	319.251
61	84	108	143	0	0	149.084	64.26	71.172	24.882	0	0	309.398
63	86	10	9	103	70	155.972	65.79	6.59	1.566	67.677	12.18	307.975
51	70	71	64	29	22	124.644	53.55	46.789	16.356	19.111	3.828	264.278
35	53	86	126	41	27	85.54	40.545	56.674	21.924	27.019	6.488	238.14
29	50	100	223	20	9	70.876	38.25	65.9	38.802	13.18	1.565	228.574
16	66	143	187	8	1	39.104	50.49	94.237	32.538	5.272	0.174	221.815
20	42	107	395	0	0	48.88	32.13	70.513	68.73	0	0	220.253
40	50	81	90	0	0	97.76	38.25	53.379	15.66	0	0	205.049
26	57	117	117	0	0	63.544	43.605	77.103	20.358	0	0	204.61
48	57	42	52	0	0	112.424	43.608	27.678	9.048	0	0	192.735
49	50	72	44	0	0	97.76	38.25	48.107	7.656	0	0	191.773
33	56	80	72	0	0	80.652	42.84	52.72	12.528	0	0	188.74





THANK YOU!

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