

Surface Water Management Plan Dyce 2016-2022



ABERDEEN
CITY COUNCIL

Surface Water Management Plan Dyce

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Background to SWMP

The Flood Risk Management (Scotland) Act 2009 (the FRM Act) establishes a flood risk management planning process for the assessment and sustainable management of flood risks with the aim of reducing the adverse consequences of flooding from all sources, including surface water flooding.

The surface water management plan will help to deliver the Scottish Government outcomes for sustainable flood risk management:

1. A reduction in the number of people, homes and property at risk of flooding as a result of public funds being invested in actions that protect the most vulnerable and those areas at greatest risk of flooding
2. Rural and urban landscapes with space to store water and slow down the progress of floods
3. Integrated drainage that decreases burdens on our sewer systems while also delivering reduced flood risk and an improved water environment
4. A well informed public who understand flood risk and adopt actions to protect themselves, their property or their businesses
5. Flood management actions undertaken that will stand the test of time and be adaptable to future changes in the climate

Surface water flooding is a significant problem in Scotland. The National Flood Risk Assessment (NFRA) published by SEPA in December 2011 estimated that around 125,000 properties are at risk of flooding from all sources. This represents 1 in 22 homes and 1 in 13 businesses with the average annual cost of damages estimated to be between £720 million and £850 million. The NFRA estimated that surface water accounts for approximately 38% of these predicted impacts in Scotland.

The term surface water flooding is often used to describe flooding from high intensity rainfall events that cause flooding from rainfall runoff flowing and ponding on the ground and also flooding from sewers and other artificial drainage systems such as road drainage when the capacity of drainage systems is exceeded. It is distinct from flooding that occurs from larger rivers and the sea. In reality the general term of surface water flooding is often a complex interaction of many sources of flooding, including flooding from the natural (e.g. smaller watercourses) and artificial (e.g. sewers) drainage systems and direct inundation of areas from surface water runoff.

Other sources of flooding can exacerbate surface water flooding, for example where high sea levels or river levels prevent drainage systems from discharging freely. The term surface water flooding for the purpose of this Plan includes flooding from the following sources:

- Pluvial flooding – flooding as a result of rainfall runoff flowing or ponding over the ground before it enters a natural (e.g. watercourse) or artificial (e.g. sewer) drainage

system or when it cannot enter a drainage system (e.g. because the system is already full to capacity or the drainage inlets have a limited capacity).

- Sewer flooding and other artificial drainage system flooding – flooding as a result of the sewer or other artificial drainage system (e.g. road drainage) capacity being exceeded by rainfall runoff or the drainage system cannot discharge water at the outfall due to high water levels (river and sea levels) in receiving waters.
- Groundwater flooding – flooding as a result of the water table rising to the surface.
- Flooding from small urban watercourses (including culverted watercourses) – flooding which occurs from small watercourses (including culverted watercourses) that receive most of their flow from inside the urban area and perform an urban drainage function. It should be noted for consideration that SEPA will not be assessing flood risk from watercourses with a catchment area less than 3km².

The purpose of a Surface Water Management Plan (SWMP) is to provide sufficient information to support the development of an agreed strategic approach to the management of surface water flood risk within a given geographical area by ensuring the most sustainable measures are identified (i.e. the most economically, socially and environmentally beneficial measures). SWMPs can be implemented at any scale and should follow a risk based approach, where most effort should be focused in areas of highest risk and where the most complex problems exist. SWMPs can therefore vary in detail to suit local requirements and the amount of detail that a SWMP contains should be proportionate to the surface water flood risk and the complexity of the problem.

Dyce SWMP Area

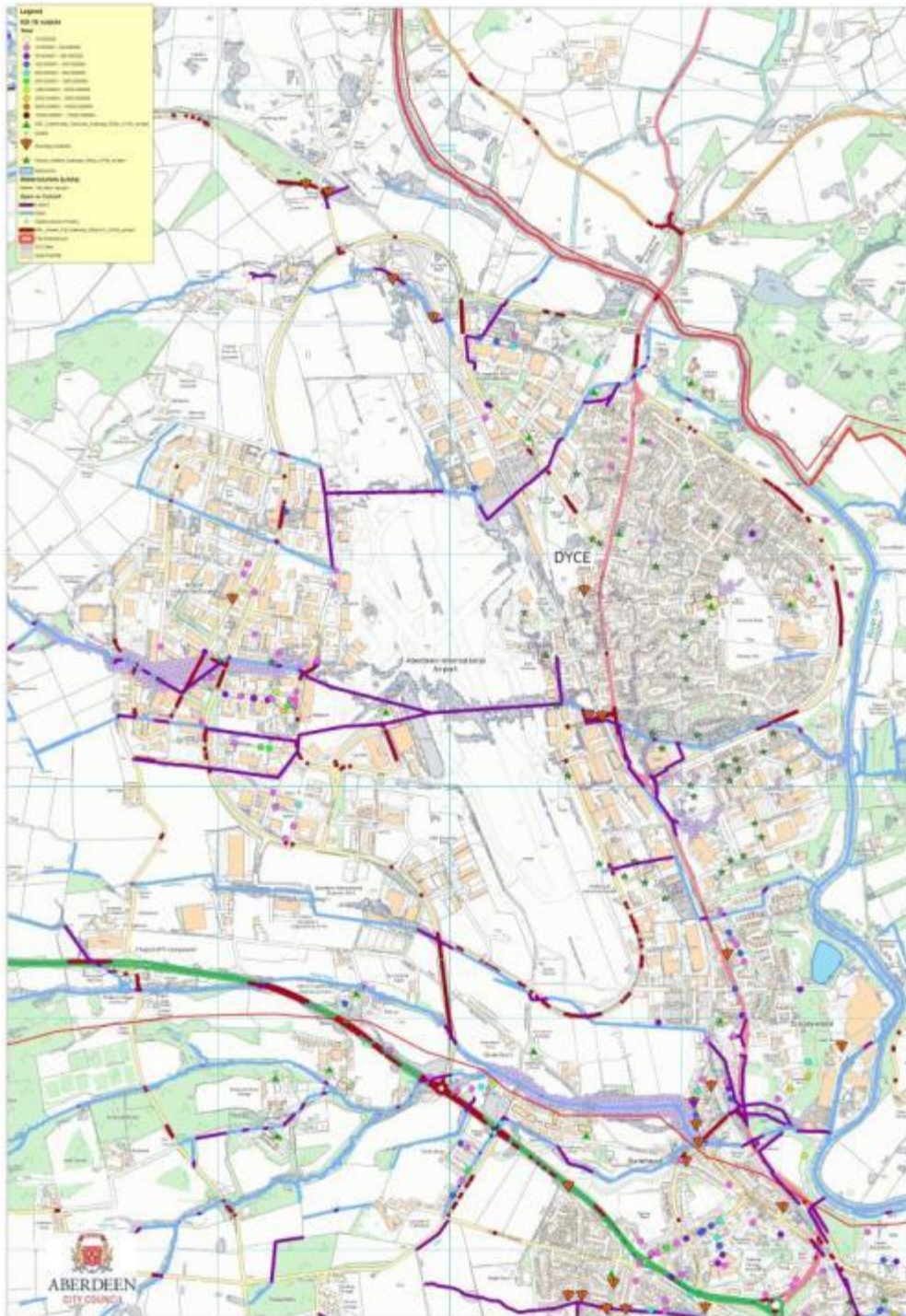


Fig.1

Assessment of Current Pluvial Flooding

Within the Dyce SWMP catchment the current assessed cost due to pluvial flooding from minor catchments has been assessed below. The information has been taken from SEPA Pluvial map data and the ICS model. The PVA estimates the damages from surface water flooding to be:-

PVA ID	PVA reference	Easting	Northing	Total Surface EAD
48	06/15	387998	812360	£855,000

Initial assessment of the Dyce SWMP highlights 9 areas of significant risk looking based on the assessment of all of the current flooding data available. The areas at significant risk from over land flooding are:-

- Cluster 1: Tillybrig
- Cluster 2: Pitmedden Road
- Cluster 3: Far Burn @ Kirkhill Industrial Estate
- Cluster 4: Far Burn @ Parkhill
- Cluster 5: Green Burn Stonewood
- Cluster 6: Green Burn through AECC
- Cluster 7: Polo Gardens
- Cluster 8: Greenburn Drive/Greenburn Road/Waterton Road
- Cluster 9: Greenburn Drive/Bankhead

The damages and properties at risk for each of these cluster areas is shown in the table below. For details on each cluster including flood risk maps see appendix B

		Weighted AAD Approach					
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD for Res Properties
Cluster 1	SEPA/ Flood Records	4	0	Average	0	0	£47,857.90
Cluster 2	ICS/Flood Records/SEPA	7	15	Average	2	0	£83,751.33
Cluster 3	ICS/Flood Records/SEPA	0	65	Average	6	0	£0.00
Cluster 4	ICS/Flood Records/SEPA	141	7	Relatively Low	4	0	£1,686,991.10
Cluster 5	ICS/Flood Records/SEPA	19	4	Average	0	0	£227,325.04
Cluster 6	ICS/SEPA	19	6	Relatively Low	0	2	£227,325.04
Cluster 7	ICS /Flood Records	33	0	Average	0	0	£394,827.71
Cluster 8	ICS/Flood Records/SEPA	11	0	Average	0	0	£131,609.24
Cluster 9	ICS	107	11	Average	2	0	£1,280,198.92
Total Dyce AAD							£4,079,886.29

Dyce PVA Catchment description

The Dyce SWMP catchment drains an area of 13km² into the River Don. The Dyce SWMP catchment is an urban area with some small areas being agricultural land. The surface water drainage system is a combination of both culverted and open watercourses. There are 3 Burns that run through the main urban area and these are Far Burn, North Kirkhill Burn and Green Burn. There is approximately 21km of open watercourse and 12km of culverted water course within the catchment.

There are no reservoirs located within the PVA catchment which have a direct impact on the surface water system

Dyce Sewer system description

This section to be filled in by Scottish water

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Historical flooding

The following is the current list which identifies pluvial flooding from records which ACC have access to.

Flooding highlighted from the ACC data set

Date	STREET_NAM	FLOODNO	TYPE_CAUSE	CAUSE_COMM
07/02/1978	Greenburn Road	58	Road Drainage	Ponding occurring around 124/128. Gullies do not drain.
22/10/2002	Pitmedden Rd	23	Surface runoff	Road badly flooded due to poor gully outfall (this assumption was not correct - see incident on 21st November 2002)
22/10/2002	Greenburn Drive	26	Surface runoff	Dip in bottom of road gathered water rendering it impassible. Burn overflowed near the scout hut due to blocked gullies and flowed down Waterton road to collect at lowest point by bridge. Flooded elderly residential home.
21/11/2002	Pitmedden Rd	28	Surface runoff	Carrier drain from gully blocked with effluent from Tillybrig Cottage - illegal connection. Carrier drain replaced and illegal connection removed
2005 - 07	Inverurie Road	143	Fluvial	Choked drainage ditches in forestry area. Extent of flooding not recorded.
2005 - 07	Union Row	161	Surface Runoff	Possible damage or insufficient drainage. Extent of flooding not recorded.
2005 - 07	Polo Gardens	165	Surface Runoff	Blockages to gullies and pipework. Extent of flooding not recorded.
2007 - 09	Farburn Terrace	183	Surface Runoff	Overspill of nearby watercourse. Blocked Heck, damaged or blocked gullies. Extent of flooding not recorded.
2007 - 09	Pitmedden Road, Beidleston	186	Assumed Fluvial	Water course with Network Rail Boundary blocked.
2007 - 09	Howe Moss Drive	190	Surface Runoff	Industrial unit to rear of units 1-9 Airport Commerce. Inadequate capacity in culvert through car park.
2007 - 09	Union Road	198	Surface Runoff	Flooding to property. Gullies replaced afterwards.
2007 - 09	Pitmedden Road	209	Surface Runoff	Gullies blocked flooding road and properties. Inadequate capacity. New drainage system required.
2007 - 09	Lade Crescent	219	Surface Runoff	Properties flooded. Cause not recorded but Network Rail to investigate.
2003 - 05	Farburn Terrace	129	Assumed Fluvial	Debris accumulation at heck resulted in flooding.
22/12/2012	Pitmedden Road	250	Fluvial	Approx 1/4 mile on Kinaldie road from Dyce. 1 ile from AB21 0HD. 12" deep flood water. Flooding just past the junction to Dyce cemetery. Road flooded for several days. Soak away full. Needs pump
22/12/2012	Waterton Road	251		Supplied sandbags
22/12/2012	Waterton Road	264	Burn overtopping	Possibility of heightening the edge of the burn at the rear of the bowling green to help keep water in the burn.
21/12/2012	Stoneywood Terrace	287	Fluvial	Sandbags supplied x90
23/12/2012	Crossgates Bucksburn	323	Road Drainage	Drain overflowing in communal grass area in middle of houses.

Flooding highlighted from the Scottish Water data set

There are no records on any sewer flooding within the Dyce SWMP area.

SWMP High Level Objectives

Within this SWMP area there are 3 high level objectives that we intend to achieve. These are:-

- AVOID** This objective is to avoid surface water flooding where possible and can be achieved via a number of different ways. These can be as simple as no building in the area, to undertaking flood prevention schemes in the area.
- PROTECT** This objective is to use methods that protect using systems that are not directly related to the area and increase water levels elsewhere, such as storage ponds or increasing flood plain areas.
- PREPARE** This objective is to prepare people for what happens in a flood and what measures they can undertake. It will also include active maintenance that is required in preparation for flooding. This option will not prevent the flooding from happening, but will reduce the severity of the flood.

Aberdeen City Council's longer term aspiration is to remove all properties out of 1/30+cc Flood risk by 2028 and 1/200+cc by 2040

Current Actions in place

Current actions are tasks which are done as part of managing the flood risk in this SWMP area.

- Review of all planning applications in line with the local plan and ensure they are not increasing risk in SWMP area.
- Reactive gully maintenance
- Investigation into all reported flooding incidents
- All watercourses mapped in GIS

List of SWMP Objectives

Description of issues	High Level SWMP Objective	Local SWMP Objective	Actions
Management of DYCE SWMP	Prepare	Manage Flood risk in SWMP area	Routine Principal inspection all of water course
	Prepare	Manage Flood risk in SWMP area	Intermediate inspection of high risk water course
	Prepare	Manage Flood risk in SWMP area	Create inspection regime and baseline for all water course
	Prepare	Manage Flood risk in SWMP area	Management of GIS data. This is to include all Flood data, water course data and works undertaken on watercourse
	Prepare	Manage Flood risk in SWMP area	Yearly review of SWMP
	Prepare	Manage Flood risk in SWMP area	Update of ICS model yearly
Maintenance of DYCE SWMP	Avoid	Reduced Flood Risk in SWMP area	Ensure that all works within this area meet the planning guidance note
	Protect	Reduced Flood Risk in SWMP area	All gullies to be cleaned on a yearly basis
	Protect	Reduced Flood Risk in SWMP area	Increased street cleaning on tree lined roads from September to December
	Prepare	Manage Flood risk in SWMP area	Yearly community engagement event to highlight the flooding risk and what can be done by locals to reduce this.
	Protect	Manage Flood risk in SWMP area	Create list of high risk roads/gullies that require increased emptying
	Protect	Reduced Flood Risk in SWMP area	Promote and Maintain PLP grant scheme for all at-risk properties
	Protect	Reduced Flood Risk in SWMP area	Review all Local Development sites in ICS model to assess long term risk they pose
	Protect	Reduced Flood Risk in SWMP area	Increased gullies clearing in autumn on high risk gullies

Capital Works	Avoid	Reduce Flood Risk within Cluster 6	Undertake Flood study within Cluster 6. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce Flood Risk within Cluster 4	Undertake Flood study within Cluster 4. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce overall SWMP Flood Risk	Update ICS model to FEH 13 Flood Risk
	Avoid	Reduced overall SWMP Flood Risk	Retrofit SUDS to ACC community buildings
	Avoid	Reduce overall SWMP Flood Risk	Retrofit SUDS to ACC residential property
	Avoid	Reduce Flood Risk within Cluster 1	Undertake Flood study around the area highlighted within Cluster 1. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce Flood Risk within Cluster 2	Undertake Flood study around the area highlighted within Cluster 2. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce Flood Risk within Cluster 3	Undertake Flood study within Cluster 3. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce Flood Risk within Cluster 5	Undertake Flood study within Cluster 5. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce Flood Risk within Cluster 7	Undertake Flood study within Cluster 7. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce Flood Risk within Cluster 8	Undertake Flood study within Cluster 8. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduce Flood Risk within Cluster 9	Undertake Flood study within Cluster 9. Study to include Long List and Short List of options and proposed solution
	Avoid	Reduced overall flood risk in SWMP cluster Areas	Undertake investment scheme which has been highlighted in flood studies. Scheme to have minimum level of protection of 1% risk of probability of flooding and have a CBR greater than 1

2016-2022 SWMP Management Action

Below are the actions which will be done routinely during every SWMP cycle.

Description of issues	High Level SWMP Objective	Local SWMP Objective	Actions	Work stream	Cycle Spend	Owner	Priority
Management of DYCE SWMP	Prepare	Manage Flood risk in SWMP area	Routine Principal Inspection all of water course	Inspection	2016-2022	ACC SCF	Medium
	Prepare	Manage Flood risk in SWMP area	Intermediate inspection of high risk water course	Inspection	2016-2022	ACC SCF	Medium
	Prepare	Manage Flood risk in SWMP area	Create inspection regime and baseline for all water course	Baseline Setting	2016-2022	ACC SCF	high
	Prepare	Manage Flood risk in SWMP area	Management of GIS data. This is to include all Flood data, water course data and works undertaken on watercourse	Office	All	ACC SCF	Medium
	Prepare	Manage Flood risk in SWMP area	Yearly review of SWMP	Office	All	ACC SCF	low
	Prepare	Manage Flood risk in SWMP area	Update of ICS model yearly	Office	All	ACC/ Scottish	low

2016-2022 SWMP Maintenance Action

Below are the actions which will be done routinely during every SWMP cycle.

Description of issues	High Level SWMP Objective	Local SWMP Objective	Actions	Work stream	Cycle Spend	Owner	Priority
Maintenance of DYCE SWMP	Avoid	Reduced Flood Risk in SWMP area	Ensure that all works within this area meet the planning guidance note	Planning	All	ACC Planning	Medium
	Protect	Reduced Flood Risk in SWMP area	All gullies to be cleaned on a yearly Basis	Maintain	All	ACC Roads	Medium
	Protect	Reduced Flood Risk in SWMP area	increased street cleaning on tree lined roads from September to December	Maintain	All	ACC Roads	high
	Prepare	Manage Flood risk in SWMP area	Yearly community engagement event to highlight the flooding risk and what can be done by locals to reduces this.	Community	All	ACC SCF	Medium
	Protect	Manage Flood risk in SWMP area	Create list of high risk roads/gullies that require increased emptying	Baseline Setting	2016-2022	ACC SCF	high
	Protect	Reduced Flood Risk in SWMP area	Promote and Maintain PPL grant scheme for all risk Properties	Newbuild	2016-2022	ACC SCF	Medium
	Protect	Reduced Flood Risk in SWMP area	Review All Local Developments sites in ICS model to assess long term risk they pose	Maintain	all	ACC SCF	low
	Protect	Reduced Flood Risk in SWMP area	increased gullies clearing in autumn on high risk gullies	Maintain	All	ACC Roads	high

2016-2022 SWMP Investment Action

Below are the actions which will be done routinely during every SWMP cycle.

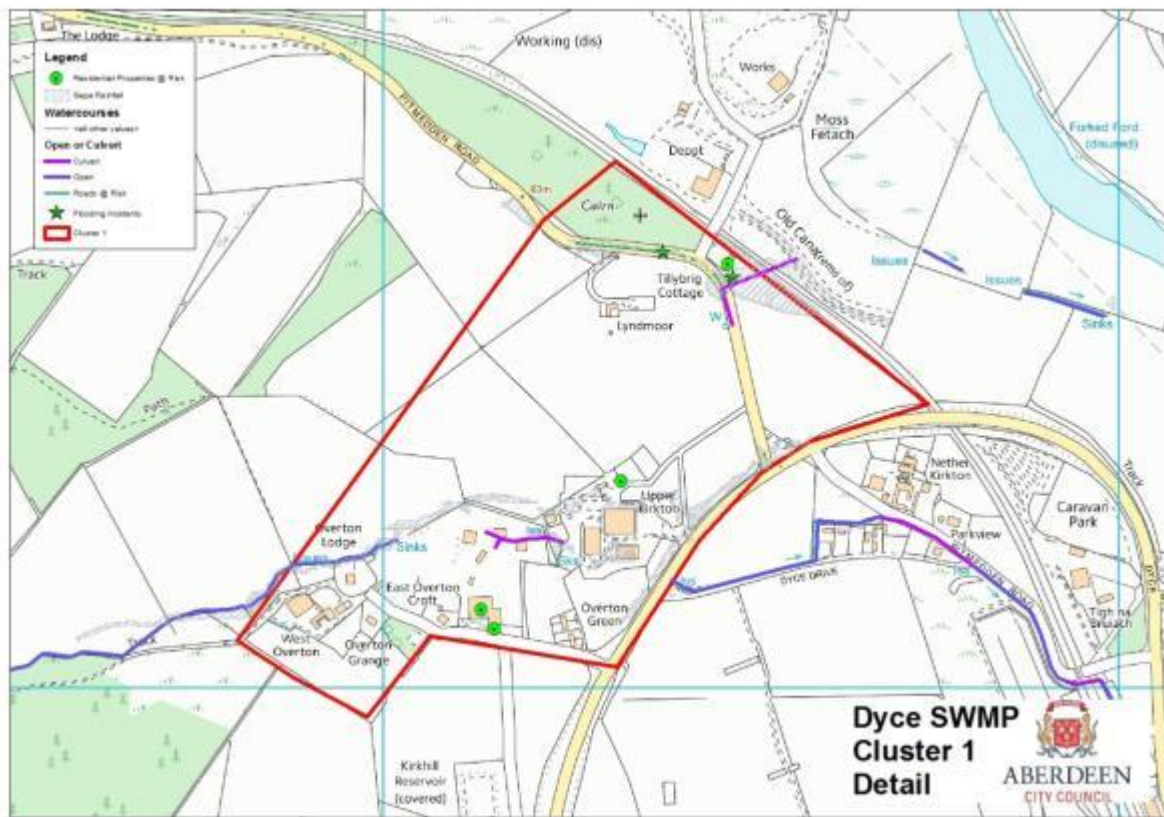
Description of issues	High Level SWMP Objective	Local SWMP Objective	Actions	Work stream	Cycle Spend	Owner	Priority
Capital Works	Avoid	Reduce Flood Risk within Cluster 6	Undertake Flood study within Cluster 6. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC/ Scottish Water	high
	Avoid	Reduce Flood Risk within Cluster 4	Undertake Flood study d within Cluster 4. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC/ Scottish Water	high
	Avoid	Reduce overall SWMP Flood Risk	update ICS model to FEH 13 Flood Risk	Baseline Setting	2016-2022	ACC/ Scottish Water	Medium
	Avoid	Reduce Flood Risk within Cluster 1	Undertake Flood study around the area highlighted within Cluster 1. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC SCF	high
	Avoid	Reduce Flood Risk within Cluster 2	Undertake Flood study around the area highlighted within Cluster 2. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC SCF	high
	Avoid	Reduce Flood Risk within Cluster 3	Undertake Flood study within Cluster 3. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC SCF	high
	Avoid	Reduce Flood Risk within Cluster 5	Undertake Flood study within Cluster 5. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC SCF	high
	Avoid	Reduce Flood Risk within Cluster 7	Undertake Flood study within Cluster 7. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC SCF	high
	Avoid	Reduce Flood Risk within Cluster 8	Undertake Flood study within Cluster 8. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC SCF	high
	Avoid	Reduce Flood Risk within Cluster 9	Undertake Flood study within Cluster 9. Study to include Long List and Short List of options and proposed solution	Baseline Setting	2016-2022	ACC SCF	high
	Avoid	Reduced overall flood risk in SWMP cluster Areas	Undertake investment scheme which have been highlighted in flood studies. Scheme to have minimum level of protection of 1% risk of probability of flooding and have a CBR greater than 1	Newbuild	2022-2028	ACC/ Scottish Water	medium

Appendix A

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CLUSTER 1, DYCE SWMP INFORMATION SHEET

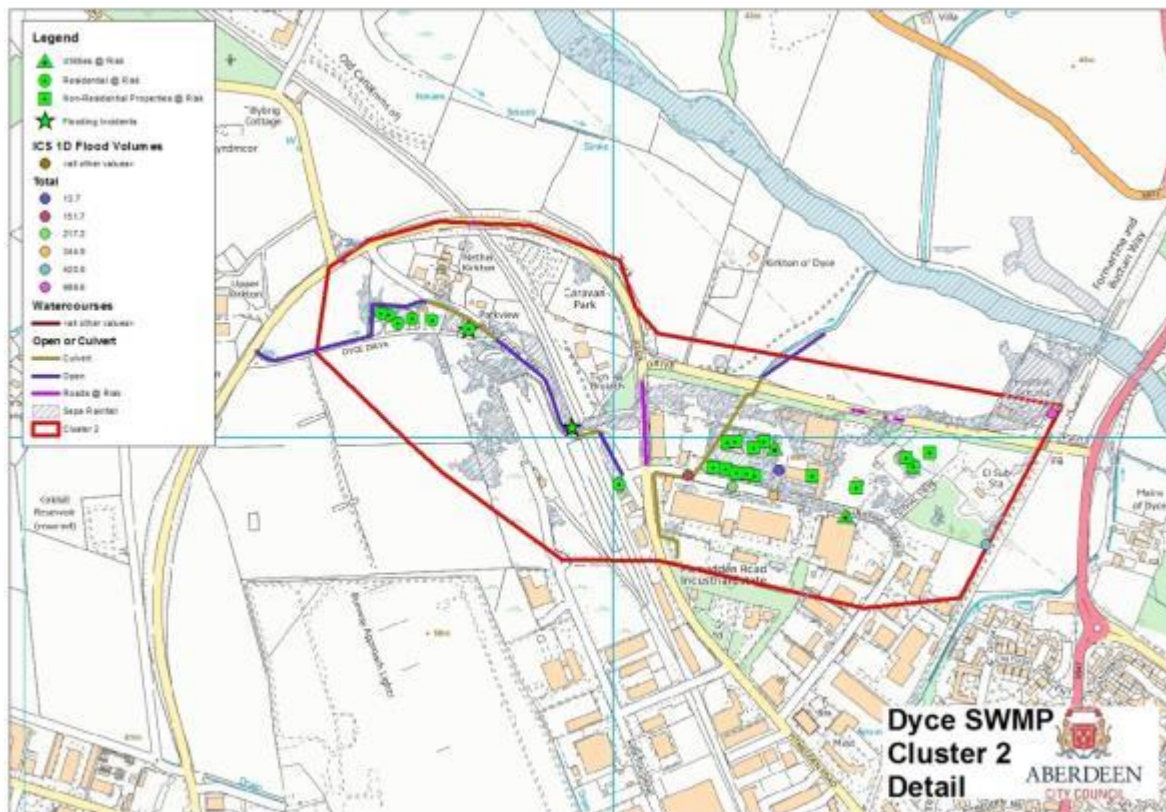
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 1	SEPA/ Flood Records	4	20		2	0	£47857.90



<p>Flooding Records:-</p> <ul style="list-style-type: none"> 28 – Surface Run off, Pitmedden Rd 240 – Fluvial, Pitmedden Rd 53 – Surface Run off, Pitmedden Rd 	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> • Potential over topping of Overturn Burn • Blocked Gullies Pitmedden Road • Soakaway Failure Pitmedden Road • Surface Run off AWPR Build 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> • NFM on Overton Burn upstream if West Overton • Increased Gullies on Pitmedden Road • Desilting of Soakaway Pipe Pitmedden Road • Suds Pond between Pitmedden Road and Railway Line • PLP
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CLUSTER 2, DYCE SWMP INFORMATION SHEET

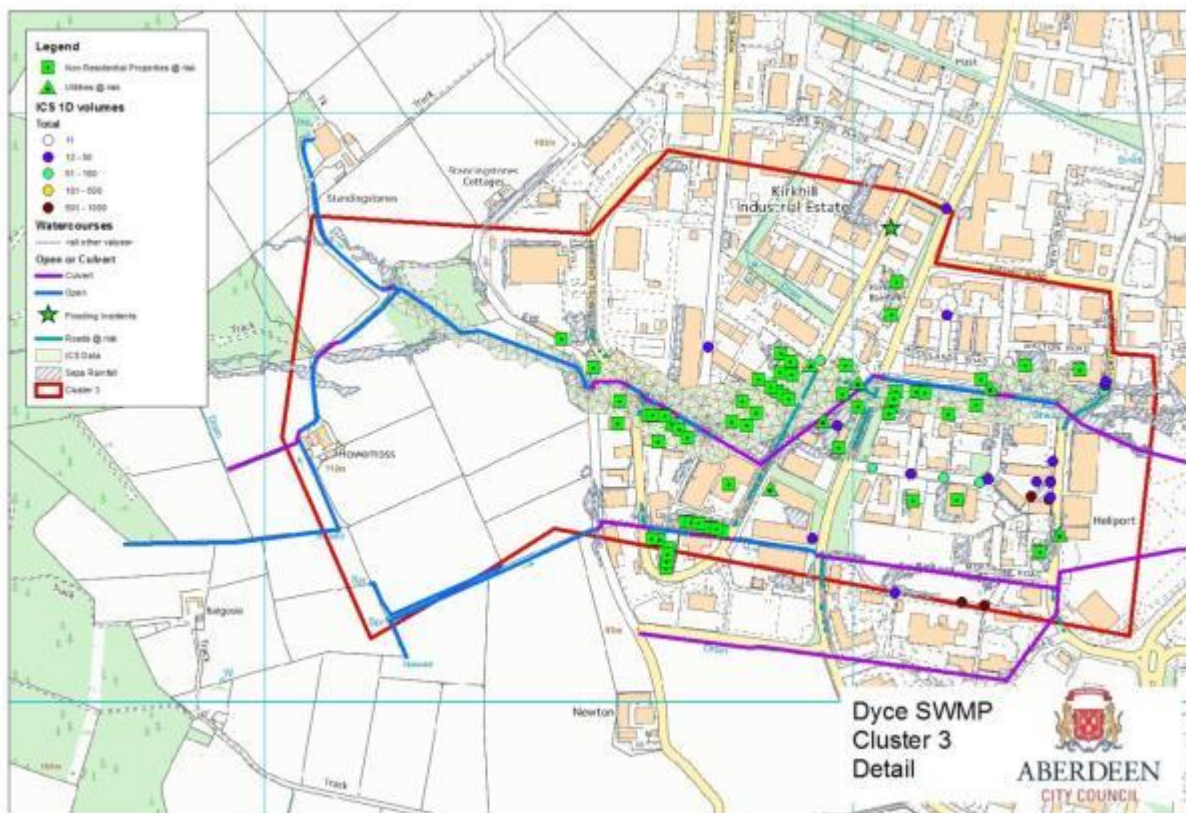
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 1	ICS/ Flood Records/ Sepa	7	15	Average	2	0	£85751.33



<p>Flooding Records:- 209 – Surface Run off, Pitmedden Rd 186 – Fluvial, Pitmedden Rd</p>	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> • Potential over topping of Overton Burn • Blocked Gullies Pitmedden Road • Block Hake Pitmedden Road • Surface Run off with Pitmedden Industrial Estate • Sewer overflow within Pitmedden Industrial Estate 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> • NFM on Overton Burn upstream • Review of Sewer model • Sewer upsizing • Surface water separation • Retrofit Suds • Increase Gully Capacity • Underground storage • Above ground storage
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CLUSTER 3, DYCE SWMP INFORMATION SHEET

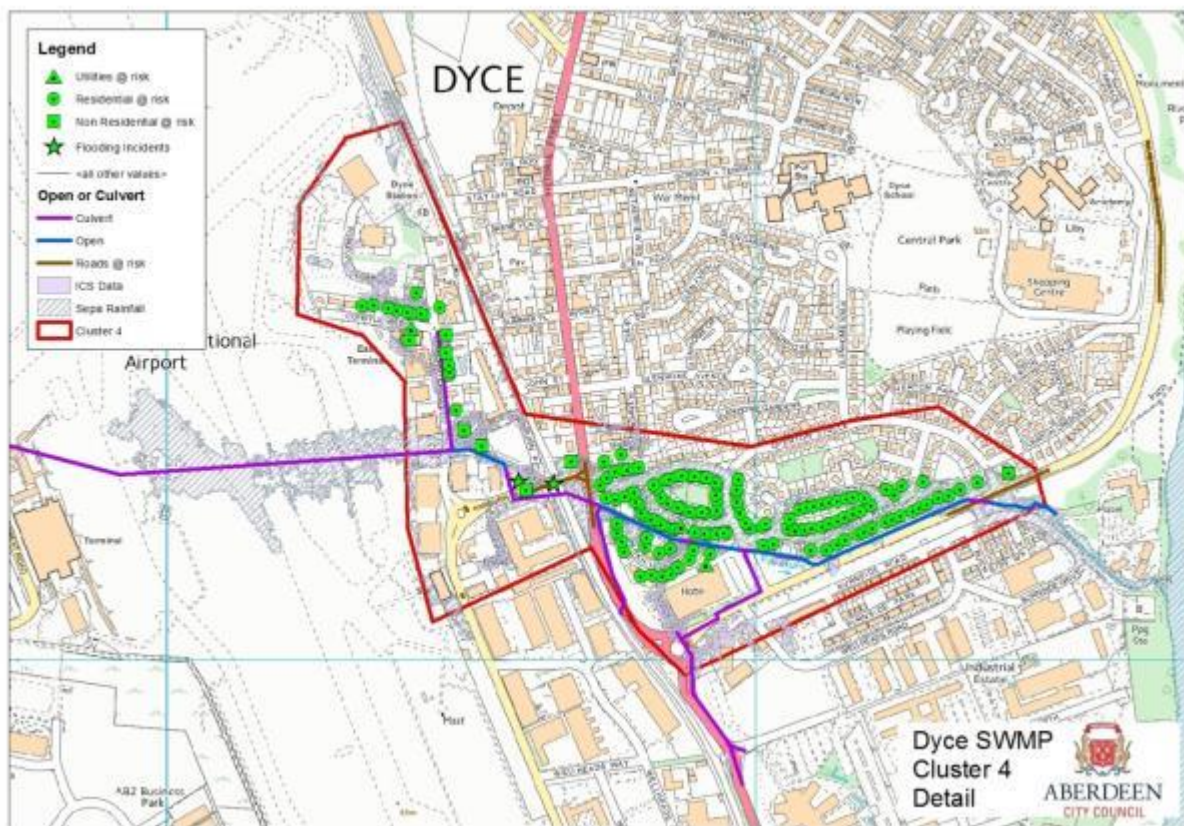
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 1	ICS/ Flood Records/ Sepa	0	65	Average	6	0	£0



<p>Flooding Records:- 190 – Howe Moss Drive</p>	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> • Over topping. • Blocked Gullies • Blocked Hake • Surface Water Sheet Flow • Failure of sewer system 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> • NFM • Upstream storage • Revised Hake Design • Surface water separation • Sewer upsizing • Underground storage • Retro Fit Suds • In line storage
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CLUSTER 4, DYCE SWMP INFORMATION SHEET

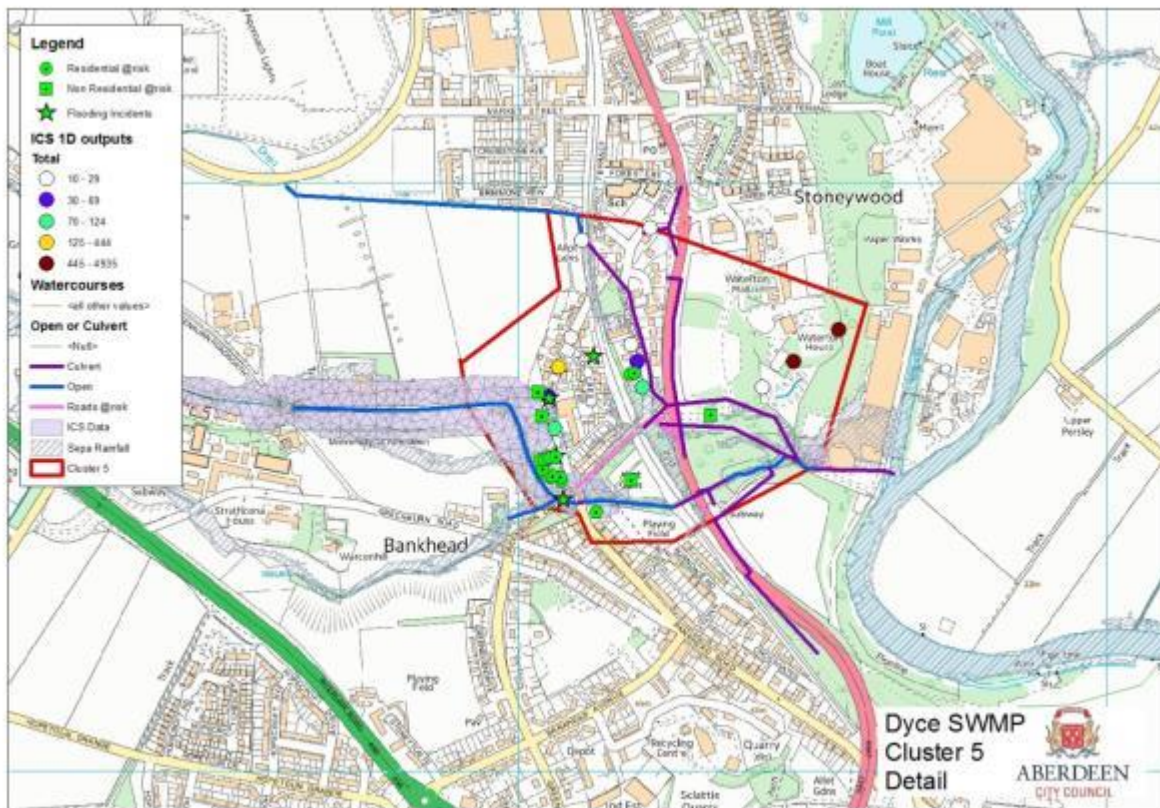
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 1	ICS/ Flood Records/ Sepa	141	7	Relatively Low	4	0	£1,686,991



<p>Flooding Records:- 129 - Fluvial, Farburn Terrace 183 – Surface Runoff, Farburn Terrace</p>	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> • Blocked Hake • Surface Run off • Lack of Gullies • Capacity in Sewer network • Capacity in watercourse network 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> • Surface Water Separation • Increased Pipe Capacity • Online Storage • Off line Storage • Retro Fit Suds • BGI • PLP • Deculverting
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CLUSTER 5, DYCE SWMP INFORMATION SHEET

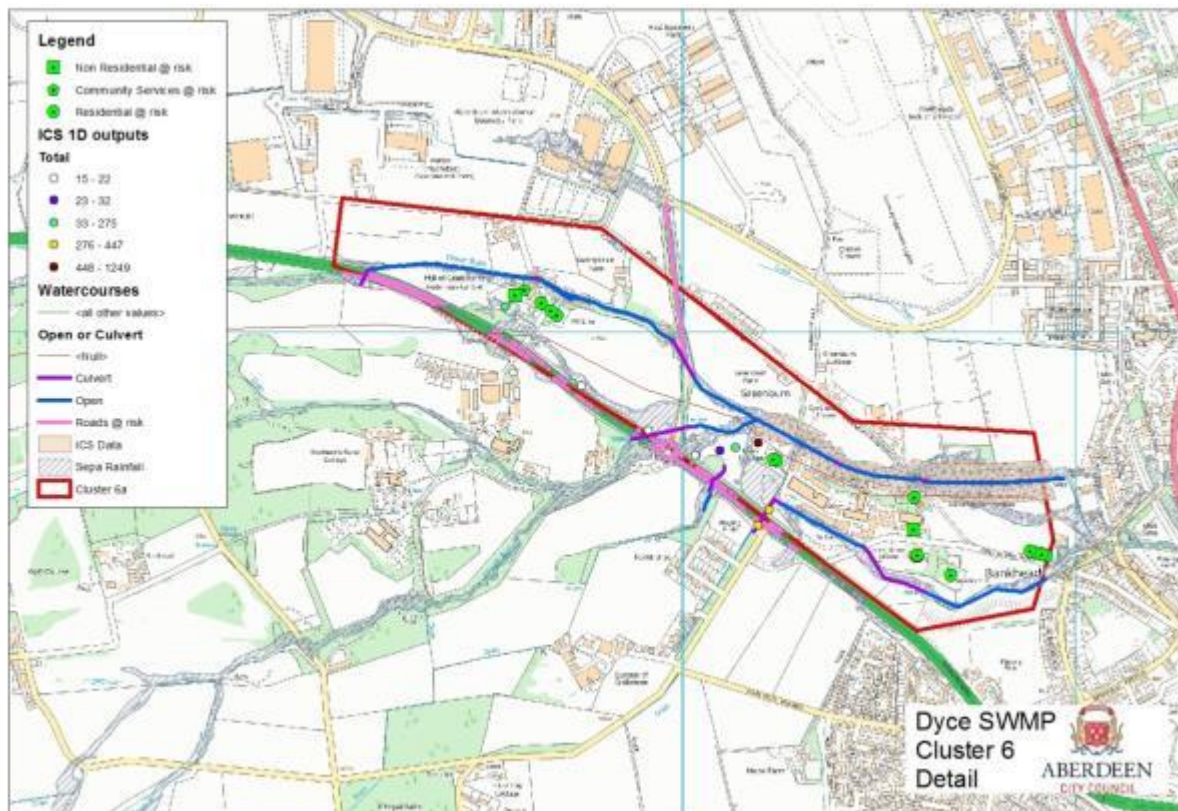
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 5	ICS/ Flood Records/ Sepa	19	4	Average	0	0	£227,325



<p>Flooding Records:- 251- ?, Waterton Road 264- Overtopping Burn, Waterton Road 26- Surface Run Off, Greenburn Drive 219- Surface Run Off Lade Crescent,</p>	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> • Blocked Hake • Over topping of Burn • Channel Morphology • Blocked Gullies • Sewer System capacity 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> • Surface Water Separation • Increased Pipe Capacity • Online Storage • Off line Storage • Retro Fit Suds • BGI • PLP • Channel realignment
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CLUSTER 6, DYCE SWMP INFORMATION SHEET

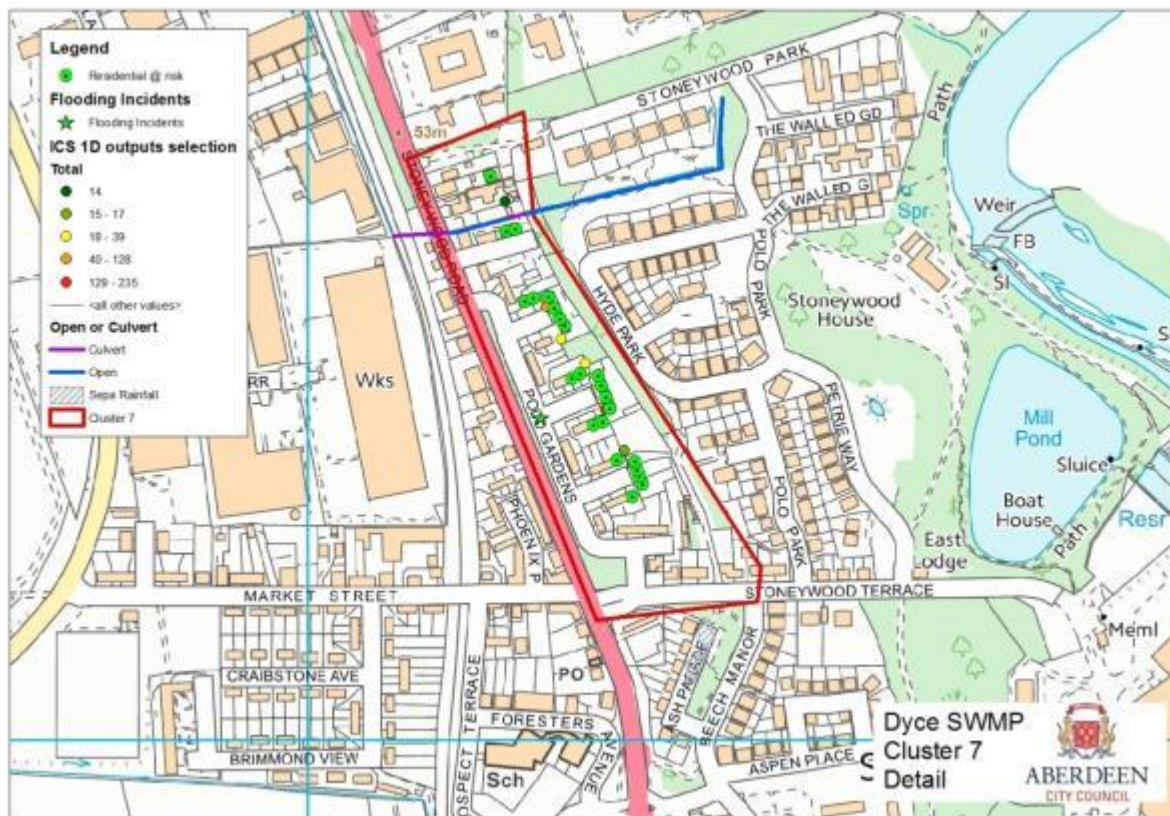
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 6	ICS/ Sepa	19	6	Relatively Low	0	2	



Flooding Records:- No Flooding Recorded	Possible causes of Flooding:- <ul style="list-style-type: none"> • Burn over topping • Blocked Screens • Channel Morphology 	Long List of Options:- <ul style="list-style-type: none"> • Online Storage • Off line Storage • Channel realignment
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CLUSTER 7, DYCE SWMP INFORMATION SHEET

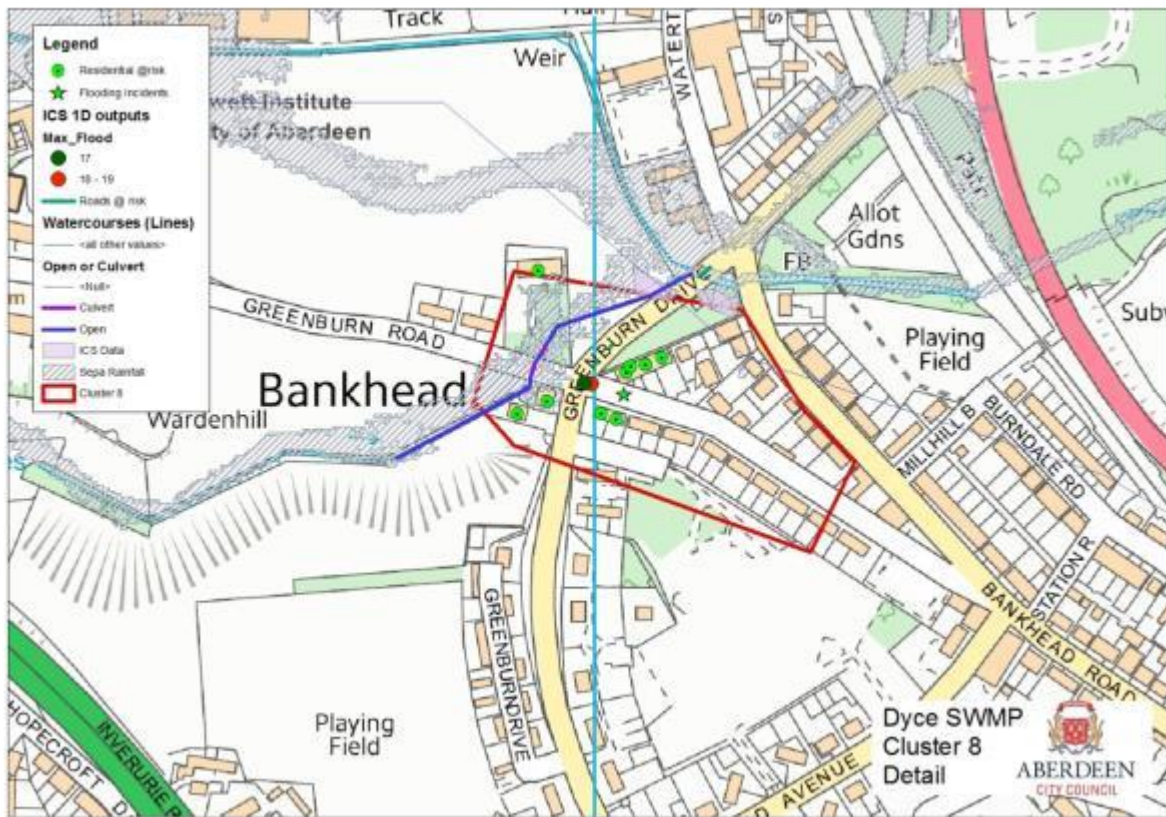
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 7	ICS /Flood Records	33	0	Average	0	0	£394,827



<p>Flooding Records:- 165 – Surface Run off, Polo Gardens</p>	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> Sewer Capacity 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> Review Hydraulic Model Sewer Upgrade Surface Water Separation
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CLUSTER 8, DYCE SWMP INFORMATION SHEET

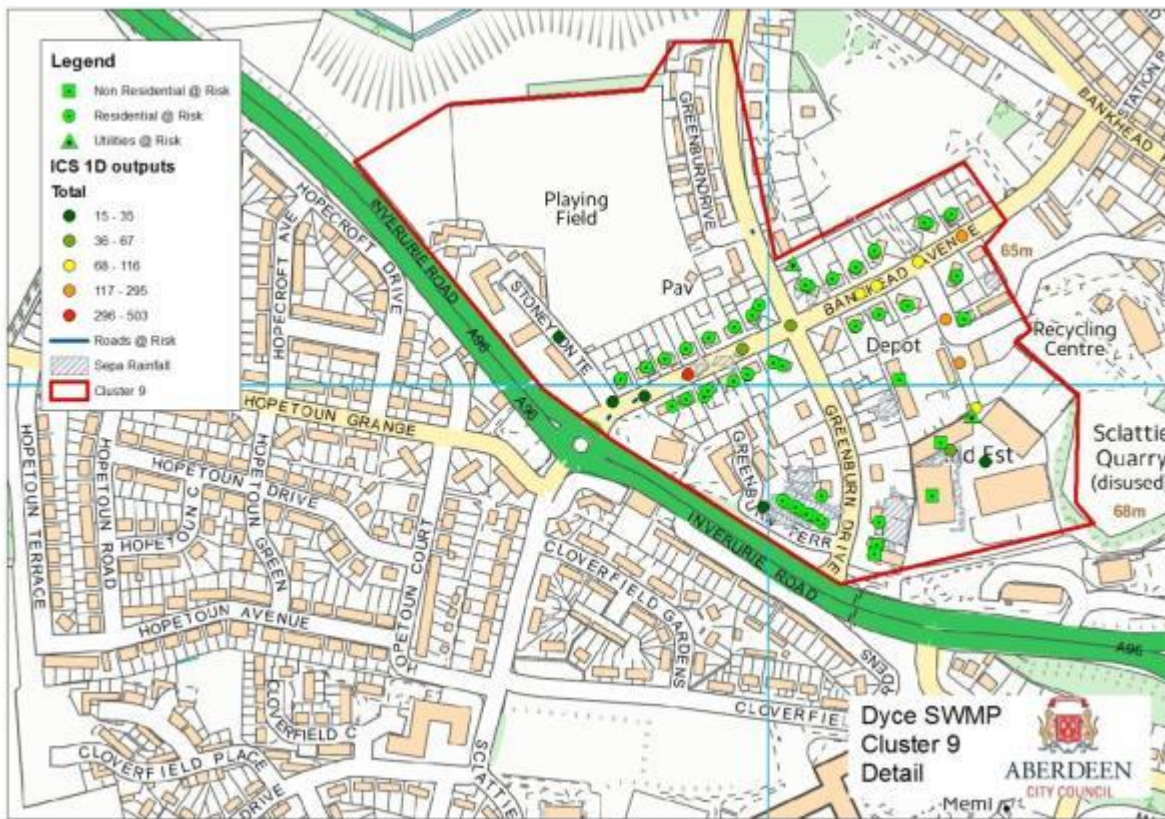
Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 8	ICS/ Flood Records/ Sepa	11	0	Average	0	0	£131,609



<p>Flooding Records:- 58 – Roads Drainage, Greenburn Road</p>	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> • Sewer Capacity • Surface Run off 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> • Retro Fits Suds • Offline Storage • Sewer Capacity Increase
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CLUSTER 9, DYCE SWMP INFORMATION SHEET

Location	Assessment Type	Residential Property	Non Residential	Flood Disadvantage	Utilities at risk	Community facilities at risk	AAD Res Properties
Cluster 9	ICS	107	11	Average	2	0	



<p>Flooding Records:- No Records</p>	<p>Possible causes of Flooding:-</p> <ul style="list-style-type: none"> • Sewer Capacity • Surface Run off 	<p>Long List of Options:-</p> <ul style="list-style-type: none"> • Review Hydraulic Model • Sewer Upgrade • Surface Water Separation
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