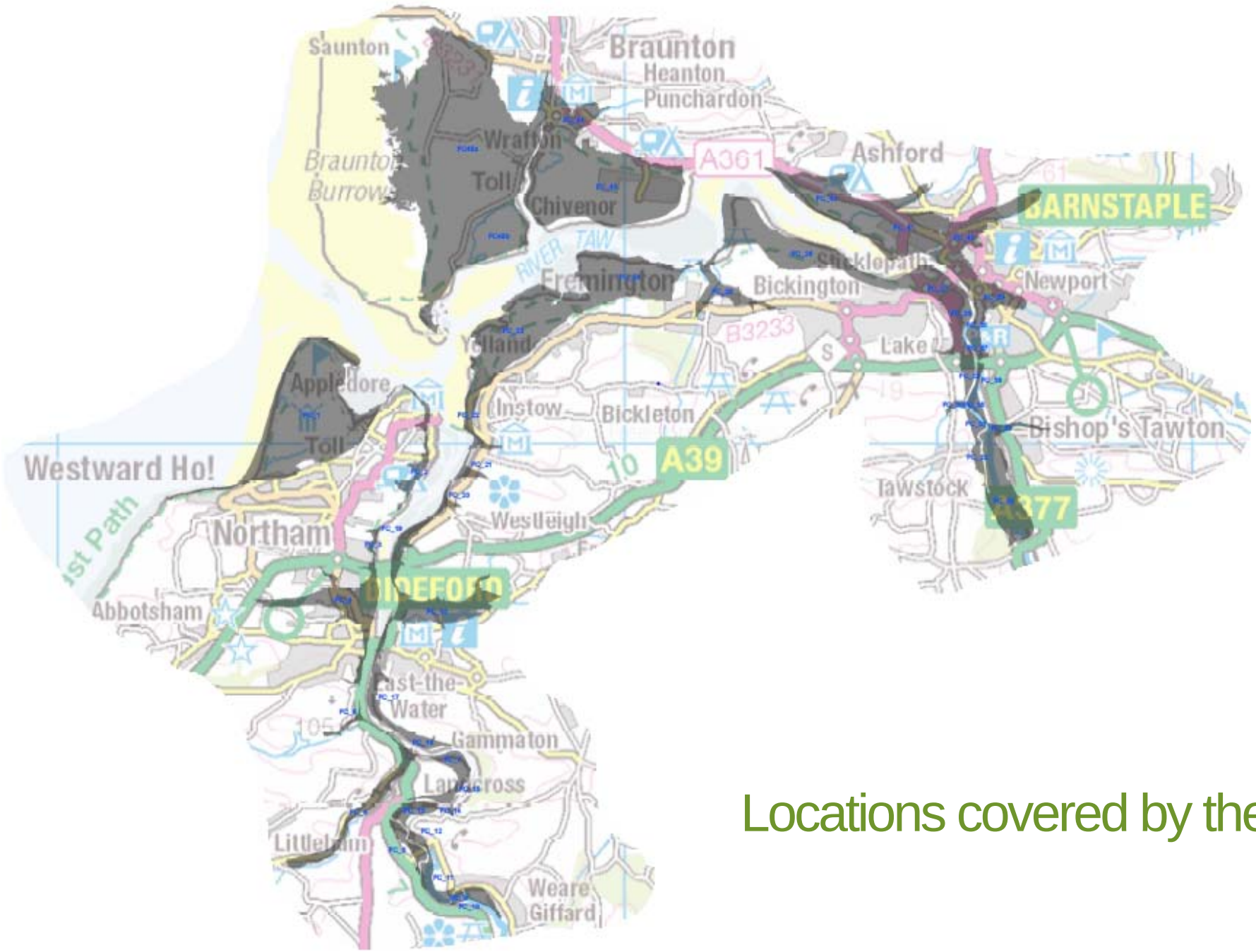
Managing tidal flood and coastal erosion risk for the Taw and Torridge Estuaries
- Non-Technical Summary Report
- May 2013

We are the Environment Agency. It's our job to look after your environment and make it a better place – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.



Locations covered by the study

Introduction

We and our Partners have a responsibility to advise on the risks of tidal flooding and coastal erosion at the Taw and Torridge estuaries. We manage these risks where we have powers to do so. We cannot stop all floods from happening but we can reduce the impact of flooding by working with others and by preparing.

We have carried out a tidal flood and coastal erosion risk study for the Taw and Torridge estuaries to:

- Review, understand and take forward the recommendations of the Shoreline Management Plan Review (SMP2), covering Hartland Point to Anchor Head;
- Identify areas where, should be opportunity arise, inter-tidal habitat could be established to improve our local environment.
- Suggest where further studies are needed to investigate flood defence concerns in more detail.

This document summarises our findings so far. It identifies areas where further work or investigation may be required in the next 10 years, but does not propose specific action on the ground at this stage.

We already know that much of the area is well protected from flooding, or is at low risk. Before any changes can be made to the way coastal defences are managed, we need carry out more detailed and targeted consultation with others, including any landowners that could potentially be affected and the wider community.

As part of this study we have already consulted with District and County Councils, Internal Drainage Board and others, including environmental bodies and interest groups.

Future climate change and sea level rise predictions mean that we need to consider both short and long term options for the management of our coast. *An explanation of technical terms is given at the back of this document.*

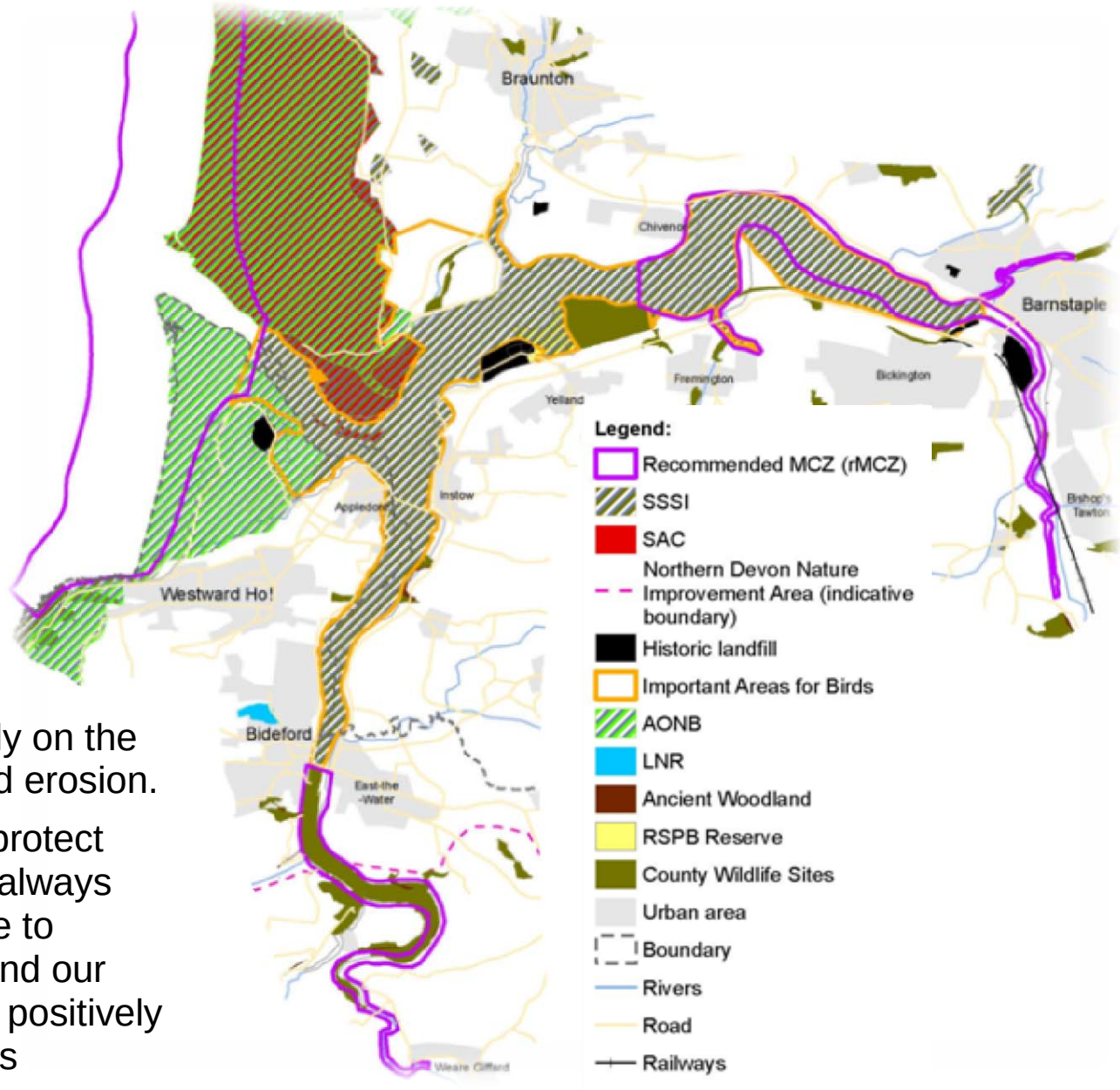
Why are the Taw and Torridge Estuaries Special?

The area is home to the people of Barnstaple, Bideford and many smaller communities. The special environment includes the wide sandy estuary, beaches, sand dunes and salt marshes. Much of this area is protected under European and UK wildlife law.

Tourists are attracted to seaside resorts and natural features in the area.

Coastal communities and businesses rely on the current defences to manage flooding and erosion.

We will consider all these interests and protect what is most valued. The coastline has always changed and will continue to change due to natural processes. Through this study and our future actions we have an opportunity to positively influence this change, so that the coast is managed in a sustainable way.



Tidal Flood Risk, Coastal Erosion and Climate Change

What do we mean by flood risk?

Flood risk combines the chance (or probability) of a particular flood happening and the impact it would have. We assess how important risk is to people, property and the environment. Homes and important infrastructure are protected to a higher standard than agricultural land.

How might climate change affect tidal flood risk?

The climate is changing and we expect sea level to rise at an increasing rate. Our best estimate is that by the end of this century the sea level will rise by 10mm each year. Such increases may seem small, but they will have a significant effect on the risk of flooding and on erosion of the coastline.

By 2060 we expect sea levels to be at least 230mm higher and probably over 400mm higher, than they were in 1990. Sea levels could be over 700mm higher by 2100. Although we do not have to

protect our coast against this sea level rise yet, it is sensible to prepare for it to protect coastal communities.

Increasing risks for people

Higher sea levels lead to higher risks of flooding and erosion, particularly if combined with stormier weather conditions.

Public money for flood defences is limited and needs to be prioritised to protect the places where most people live. This may mean changing the way existing and future defences are managed.

Increasing risks for wildlife

Inter-tidal areas such as saltmarsh and sandbanks, which can now be seen at low tide, will be under water for more of the time and areas which are rarely, or never, washed by the tide will become tidal. This will affect the habitat supporting wildlife in the estuary, which is of local and national importance in many areas.

Coastal defences, such as sea walls, create a barrier to the rising sea and prevent inter-tidal habitats from migrating to a higher ground as sea levels increase.

We cannot stop sea level rise but we can try and replace lost habitat caused by the squeeze of higher sea levels against our built flood defences. We have identified potentially suitable areas for new inter-tidal habitat as part of this study. These would only be created if the affected landowners are in agreement.

Our study has shown that:

If there were no flood defences in place 1,500 properties would be at risk of tidal flooding during a large tidal flood event (i.e. one with a 0.5% or 1 in 200 chance of occurring in any year). 1,300 of these properties are homes and the rest are businesses. Coastal defences are in place around the Taw and Torridge area, most of them are in good condition and are working well.

Some of the defences are not performing as well as we would like them to and approximately 60 properties (including 50 homes) are at risk of tidal flooding during a large tidal flood event.

Further detailed attention is needed in the Priority Areas shown on the following pages.

In 10 years time, due mainly to sea level rise, there may be up to 420 homes at risk of flooding during a major flood event and in 100 years this may increase to 1,900 homes.

Coastal erosion issues are generally focussed on the Pebbleridge fronting Northam Burrows and the exposed face of the north Burrow Landfill.

Some of the tidal flood defences in the study area defend areas where there are few or no houses. In many cases these areas offer an opportunity for creating new intertidal habitat.

How flood and coastal erosion risks can be managed

We can reduce the risk of flooding and coastal erosion by:

- maintaining, improving and constructing new coastal defence schemes;
- providing flood warning systems;
- working with local authority planners to restrict development in flood risk areas;
- encouraging flood resilience at community and individual property level;

As sea levels rise, the cost of some of these measures may outweigh the value of what is at risk. Alternative actions to adapt to the increased flood risk will then need to be considered.

In this study we only looked at tidal flood risk. However we recognise that in some areas there may also be a risk of flooding from rivers and surface water.

This study follows on from the recommendations and findings of the Shoreline Management Plan (SMP2) Review[1], which sets coastal management policies for the whole North Devon and Somerset Coast. For each area at risk we have tested the agreed policy from the SMP2. We have looked at the approximate costs and benefits of each and when we need to take action. The actions identified will need to be prioritised and will be subject to funding availability and the relevant permissions being granted (typically by the planning authority and Natural England). We will engage with landowners prior to any actions being taken forward.

Throughout this process we have worked in partnership with a range of organisations and individuals, to share ideas, test our findings and inform any future actions.

We split our study area into 47 areas known as Management Units. Those of interest within the next ten years are detailed on pages 9 to 40:

[1] (2010) Shoreline Management Plan Review (SMP2), Hartland Point to Anchor Head.

How impacts on the Environment can be managed

We have considered potential impacts on people, habitats, species, cultural heritage and the landscape.

We have identified that our actions should:

- protect the ecological value;
- protect the landscape;
- protect the historic environment;
- consider the value of agricultural land as well as built infrastructure;
- support navigation and tourism; and
- maintain or enhance the natural form of the estuary.

The main opportunities for improvement are:

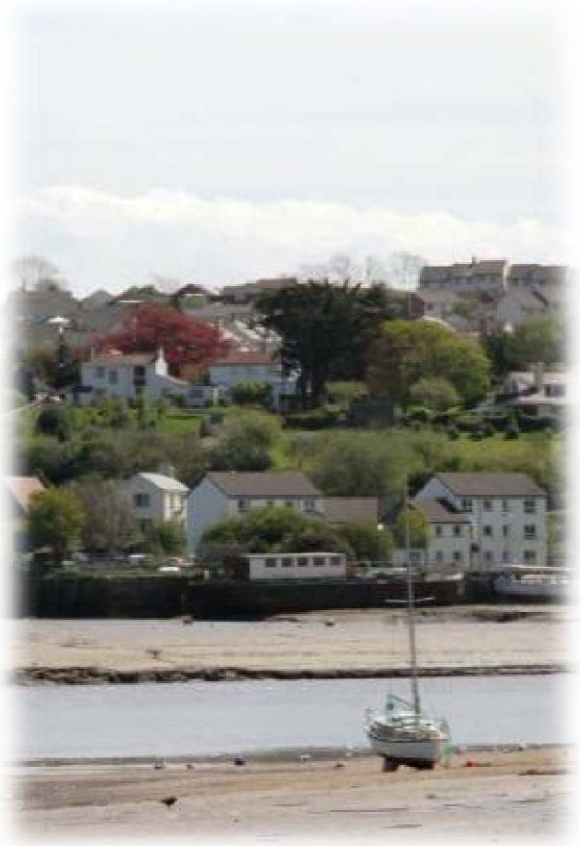
- creation of inter-tidal habitat;
- creation or enhancement of landscape features;
- reduction of pressures from flood defences on the natural estuary;
- building partnerships with Natural England, RSPB, Torridge District Council, North Devon Council, local developers, and the North Devon AONB and Biosphere Reserve to implement any agreed changes.

Our initial findings suggest there are options that are not likely to adversely affect the estuary. However, we will need to assess this further with a detailed environmental assessment if any of the potential management changes take place.

How will potential works be paid for?

Our recommendations can only be taken forward if sufficient funding can be found. Our study does not provide the detail of schemes nor does it guarantee that funding is available. To progress any of the options we will have to prioritise where money is best spent to get maximum benefit for communities given limited central government resources.

Recent changes to central government funding mean that more flood defence schemes



will receive partial funding but fewer will attract full central funding.

Contributions

Proposed flood defence works that only attract partial central government funding, can only go ahead if costs are reduced (perhaps by accepting a lower standard of protection), or if a local contribution is provided to supplement the partial funding, or a combination of these.

Consequences

If projects identified within the study cannot be fully funded (central government and/or local contribution), they will not be delivered on the ground.

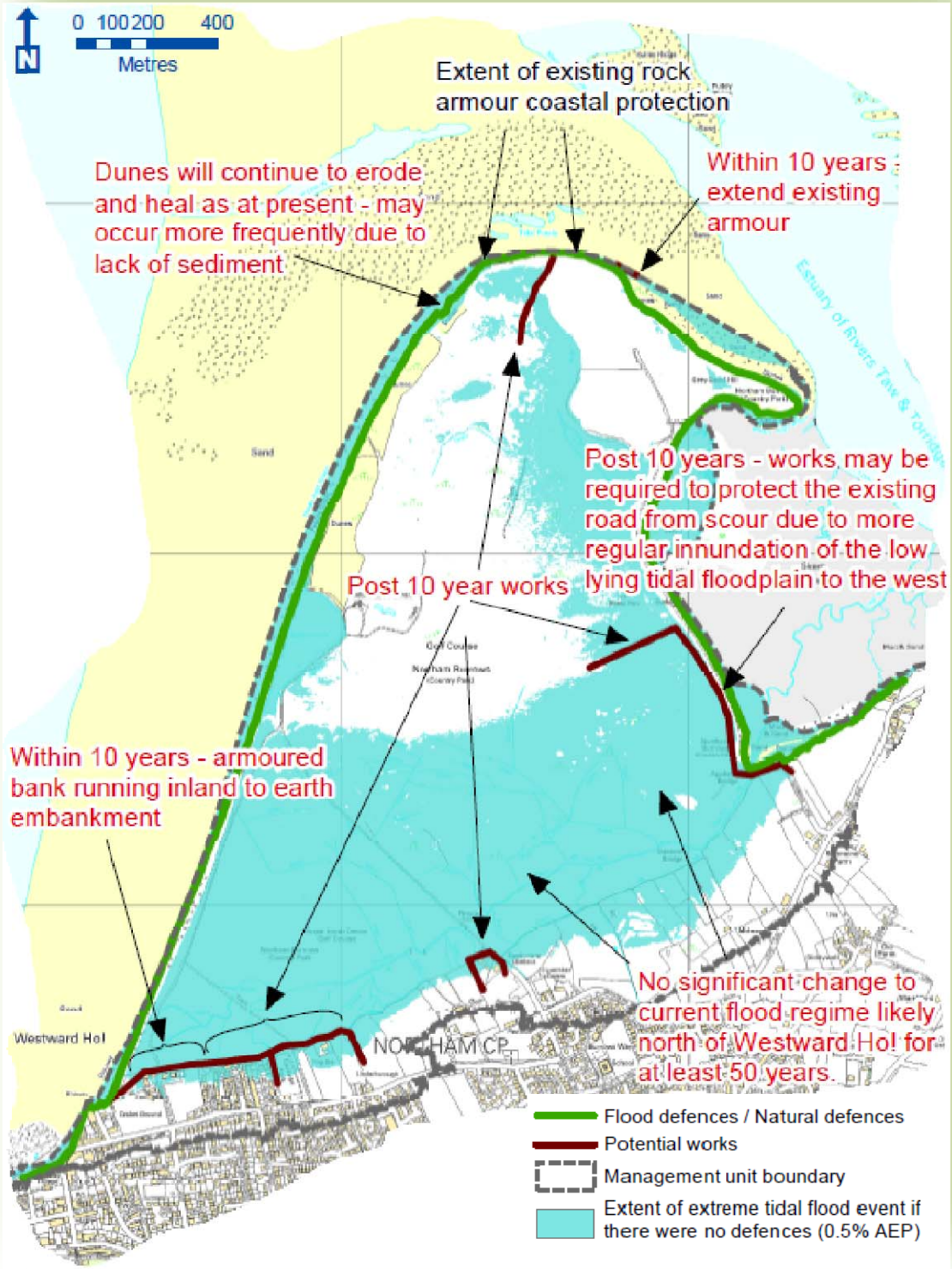
Priority Area: Northam Burrows

What is at risk?

There are approximately 20 properties currently at flood risk during a major tidal event in Westward Ho! at the southern end of the Northam Burrows Management Unit.

Our Initial Findings

- There are approximately 20 properties that are vulnerable to tidal flooding and coastal erosion as a result of wave overtopping, foreshore erosion, movement or breach of the Pebbleridge.
- The ridge is slowly moving east and the supply of new pebbles from the west is thought to be diminishing due to natural coastal processes. In future, with sea level rise, the risk of the ridge breaching is expected to increase.
- Our most likely approach to manage this risk is to allow the Pebbleridge to evolve and rotate (clockwise) naturally whilst continuing to repair any breaches as far as practical.
- A new flood defence for homes at risk could be provided to maintain the level of protection to Westward Ho! as the Pebbleridge evolves, although there is currently no funding to do this.
- The landfill and its access track are likely to continue to be protected.
- Impacts to the SSSI would be reviewed to evaluate whether any important habitats and geological features would be significantly affected.


0 100 200 400
Metres
Extent of existing rock armour coastal protection
Dunes will continue to erode and heal as at present - may occur more frequently due to lack of sediment
Within 10 years - extend existing armour
Post 10 years - works may be required to protect the existing road from scour due to more regular innundation of the low lying tidal floodplain to the west
Post 10 year works
Within 10 years - armoured bank running inland to earth embankment
No significant change to current flood regime likely north of Westward Ho! for at least 50 years.
Westward Ho!
NORTHAM CP
Flood defences / Natural defences
Potential works
Management unit boundary
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

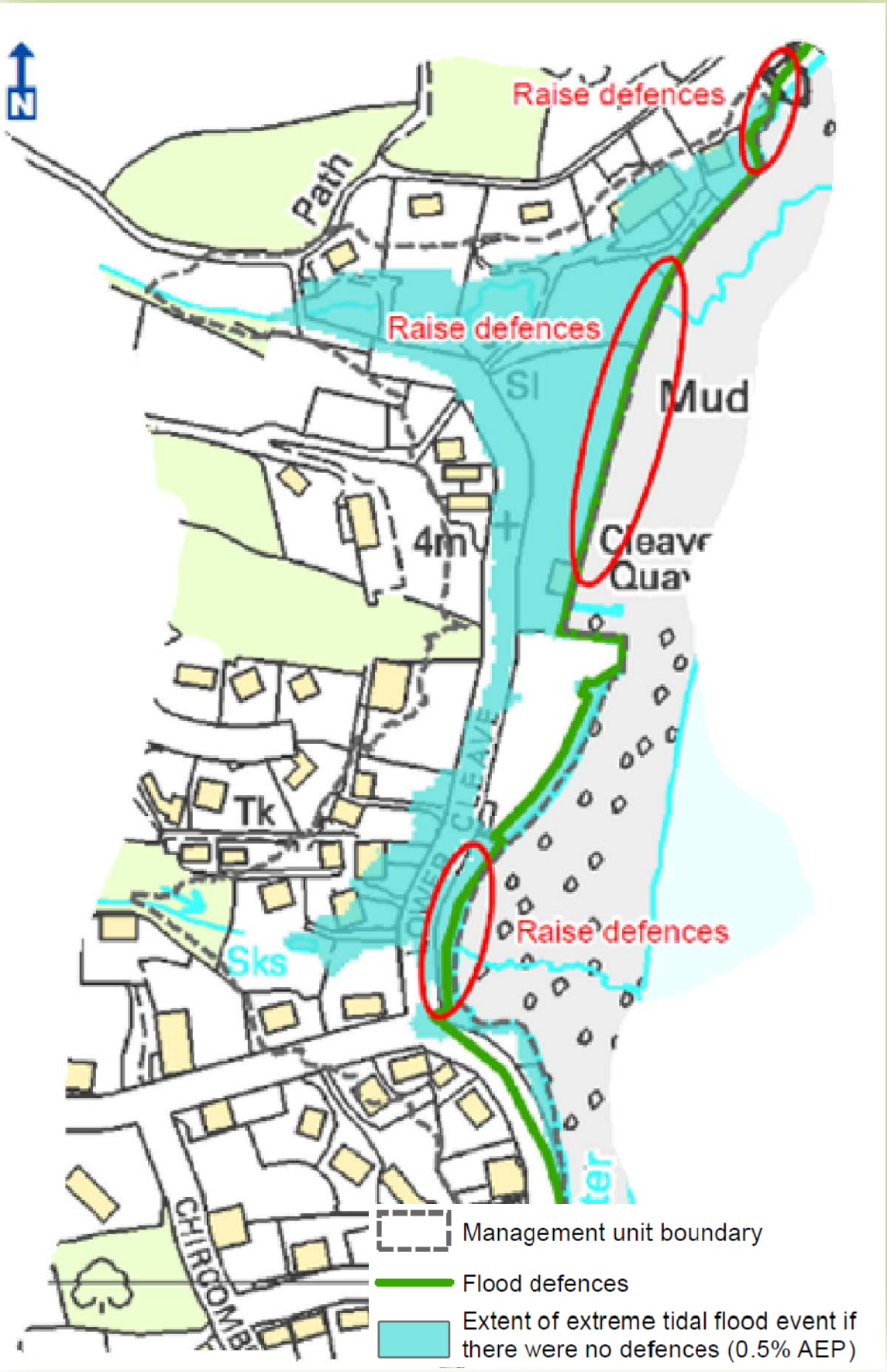
Priority Area: Northam

What is at risk?

Currently approximately 8 properties are likely to be at risk around Cleave Quay. The land rises steeply behind, limiting the overall extent of the floodplain behind the flood defences. The majority of the flood defences are masonry walls, although there is a short length of natural bank at the northern edge of the Management Unit. All the flood defences are maintained privately.

Our Initial Findings

- There are two sections of flood defence which appear to be low. Further investigation may show that the flood defences have a longer life span than 10 years.
- Repair or upgrading the low flood defences will involve appropriate design and construction management, so as to reduce any unwanted environmental impacts. These details would be defined during an Environmental Assessment process.
- 'Holding the line' i.e. keeping defences in their current position here will mean that the properties and any potential archaeological artefacts will be protected.


N
Raise defences
Path
Raise defences
Sl
Mud
4m
Tk
Sks
Raise defences
CHIRCOMB
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

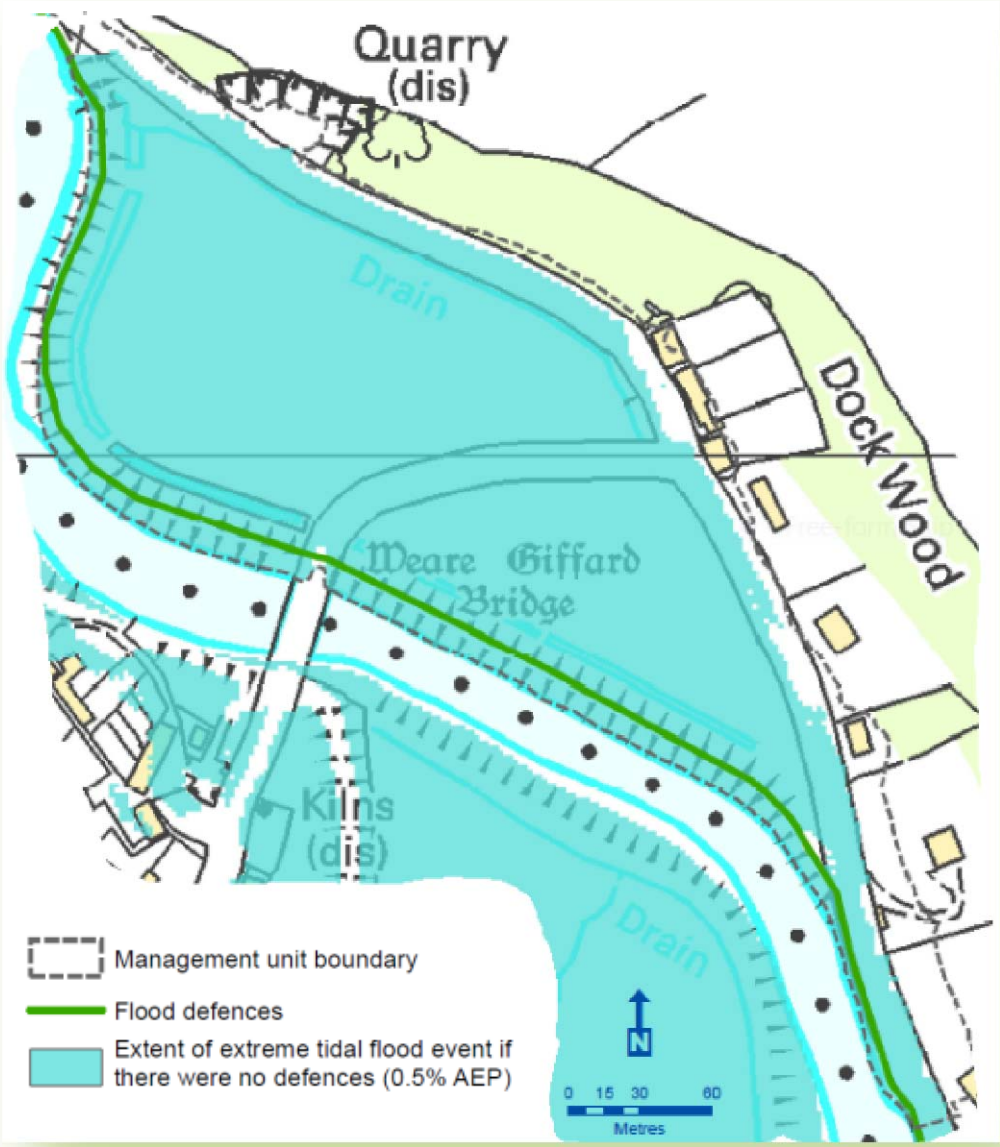
Priority Area: Halfpenny Bridge

What is at risk?

This Management Unit is approximately 6 hectares (ha) and there are no properties at risk from a tidal or fluvial flood event. The majority of the flood defences are embankments and these are currently maintained by the Environment Agency.

Our Initial Findings

- It is not likely to be economically justifiable to continue to maintain the flood defences. They are currently in a good condition and unlikely to breach in the short term. However, the flood defences are low and are, therefore, likely to overtop frequently. Inter-tidal habitat may already be forming behind the flood defence.
- We should review our flood defence management practices.
- There may be the potential to create new inter-tidal habitat here which we will discuss further with the landowner.
- The road to the west is low enough to flood and may require new defences. This would add a significant benefit to any flood defence scheme. Further analysis is required to help to decide the balance of benefit and cost for any scheme.
- Allowing the area to flood would lead to a loss of coastal and floodplain grazing marsh and Grade 3 and 4 agricultural land which would require landowner support.
- The access road to the Weare Giffard Bridge is high enough for the bridge to still be used. The views from the approach road to the bridge could be altered if the site was flooded more often by the tides.


Quarry
(dis)
Drain
Dock Wood
Weare Giffard
Bridge
Kilns
(dis)
Drain
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)
N
0 15 30 60
Metres

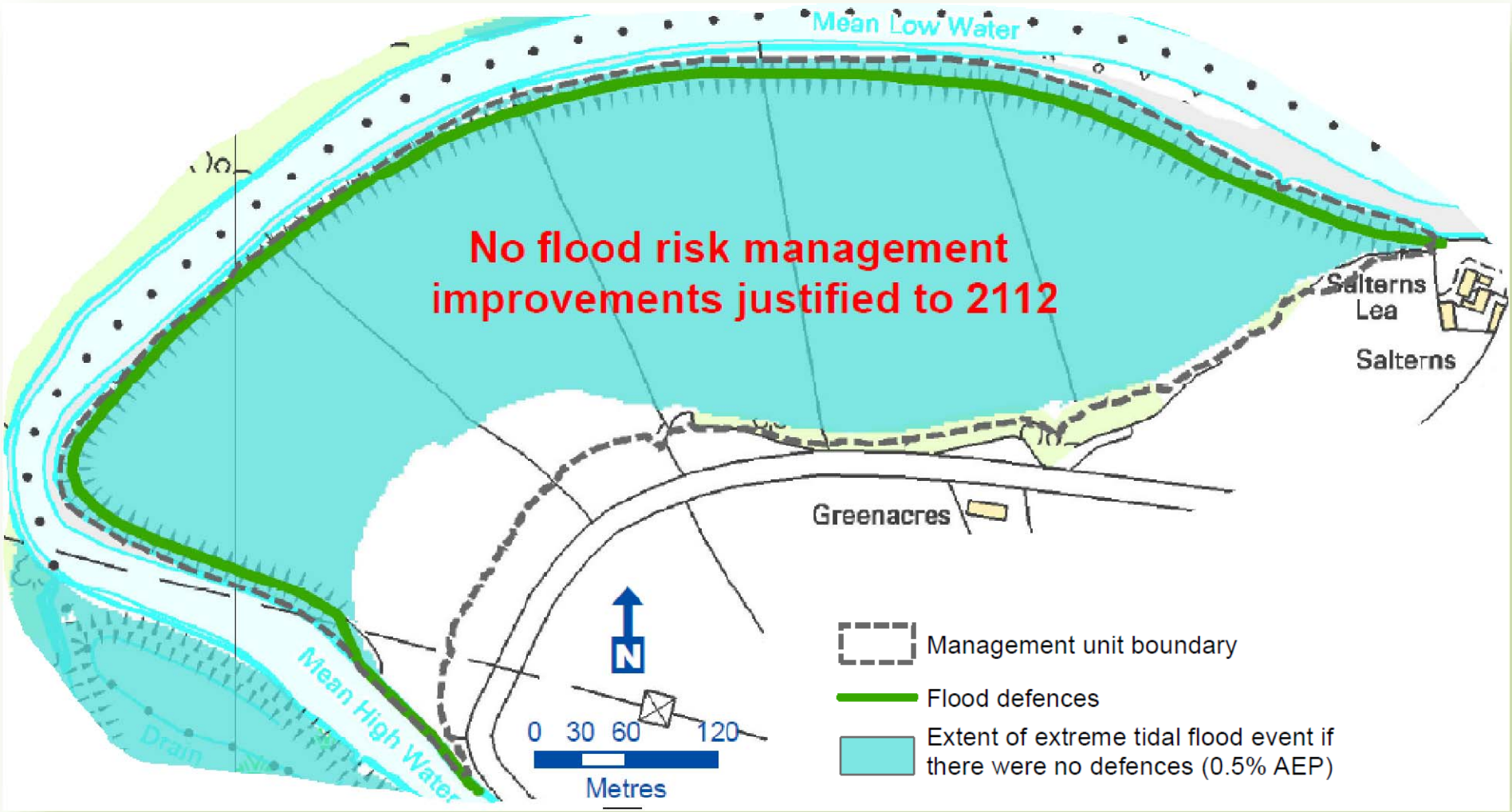
Priority Area: Salterns

What is at risk?

This Management Unit is approximately 19 hectares (ha) and there are no properties. The majority of the defences are embankments and are privately maintained.

Our Initial Findings

- We should review the flood defence management practices.
- There may be the potential to create new inter-tidal habitat (15ha) here which we will discuss further with the landowner.
- Creation of habitat will lead to a change in the Grade 4 agricultural land and can only be considered with the agreement of the landowners.
- Creation of 15ha of habitat could lead to an extension of the Torridge County Wildlife Site. However, it may also lead to a loss of grazing marsh. The benefits of habitat creation would need to be evaluated. The site has retained remnants of tidal creeks and rises to higher ground to the south and offers a site with diverse habitat creation opportunities.


Mean Low Water
No flood risk management improvements justified to 2112
Salterns Lea
Salterns
Greenacres
Mean High Water
Drain
N
0 30 60 120
Metres
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

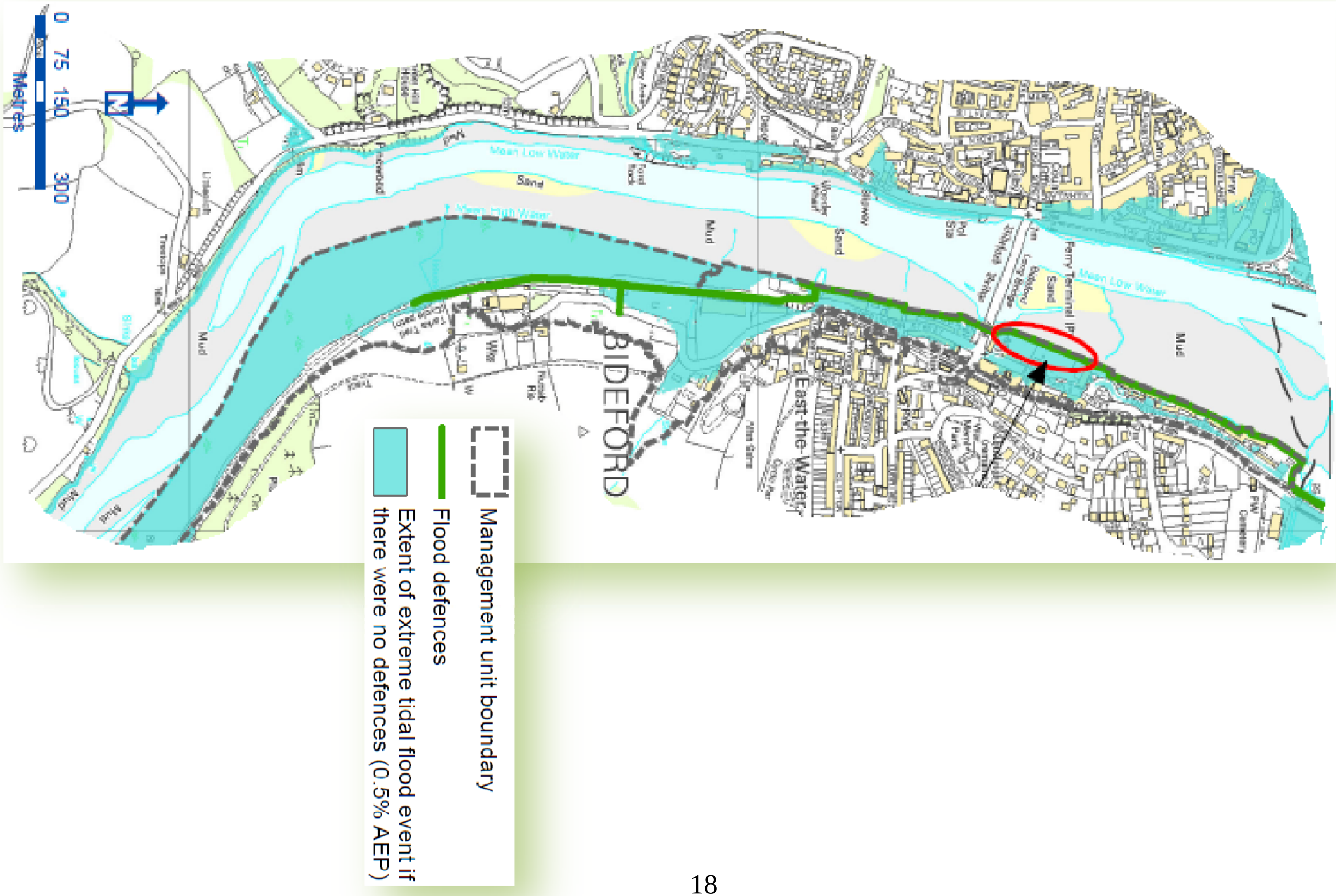
Priority Area: Bideford Right Bank

What is at risk?

This Management Unit is within East-the-Water and is urban. There are about 20 properties potentially at risk of flooding in East-the-Water if the flood defences fail. The properties at risk of flooding are all situated by Riverside Wharves, which are planned for redevelopment.

Our Initial Findings

- There is one section of low defence adjacent to the car park. Confirmation of this level and improvement of this flood defence is likely to be beneficial.
- Maintaining the current flood defences will ensure that the properties, national paths and listed buildings will not be affected.
- There is an opportunity to work with the developer at the Riverside Wharf to ensure that the development is designed to manage flood risk and to upgrade the existing flood defences.


0 75 150 300
Metres
N
Mean Low Water
Mean High Water
Sand
Mud
BIDEFORD
East-the-Water
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

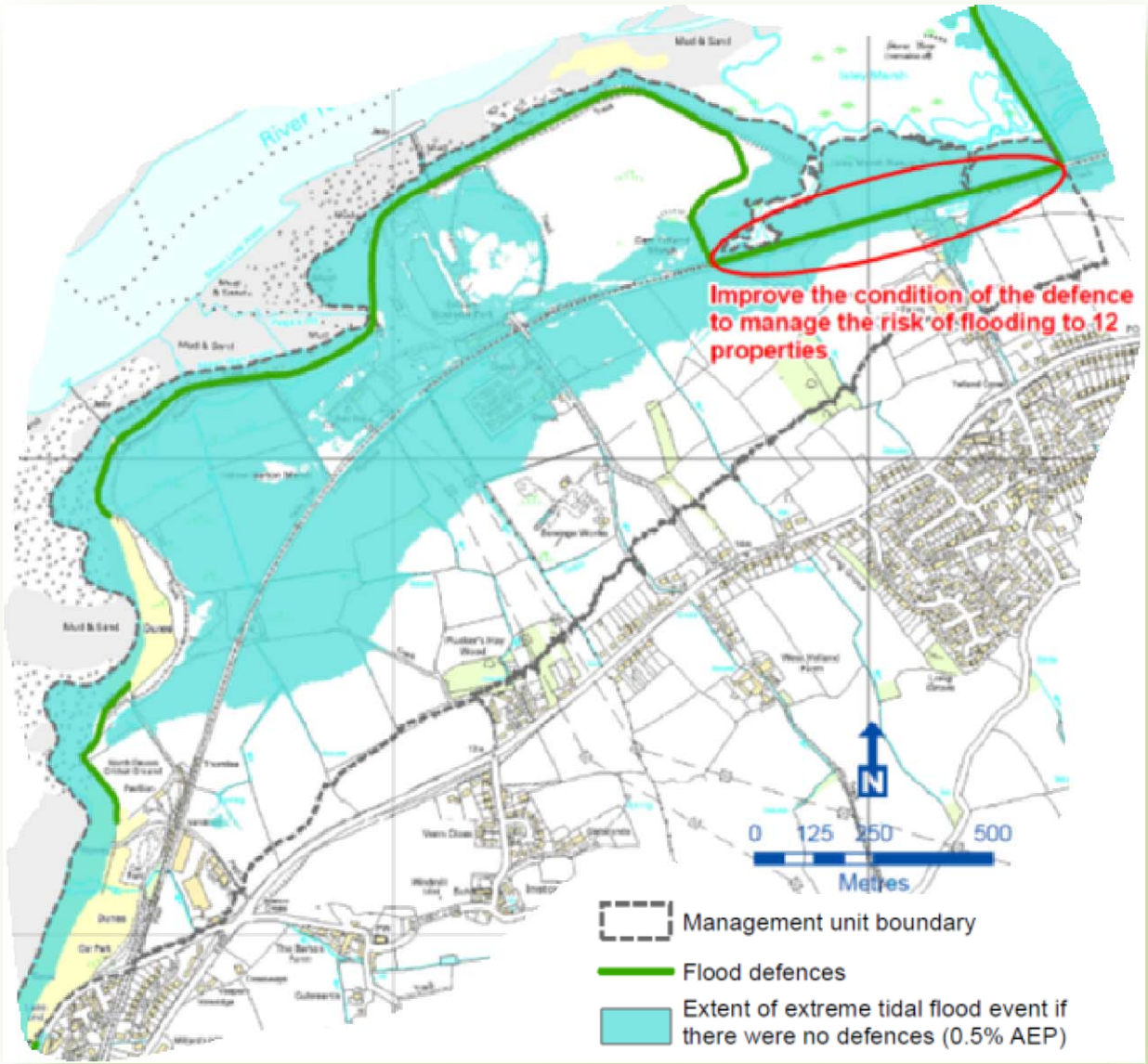
Priority Area: Yelland (Instow Barton)

What is at risk?

This Management Unit is approximately 184 hectares (ha) and approximately 12 properties and an electricity sub-station are potentially at risk of flooding due to the current standard of the flood defences. There would therefore be benefit in upgrading these flood defences.

Our Initial Findings

- Upgrading this length of embankment would improve its condition in the short term.
- By 2112 several additional properties, including the electricity sub-station, appear to be at risk of flooding due to sea level rise.The former landfill site may also be at risk of erosion. Both of these risks will need to be evaluated.
- The Tarka Trail could be at risk if the flood defences in the eastern end are not improved.
- There are some proposed moorings near the Management Unit which could provide a source of partnership funding.
- In the future, consideration will need to be given to the residents at increased flood risk due to sea level rise and the potential contaminated land impacts from the East Yelland Power Station.


Improve the condition of the defence to manage the risk of flooding to 12 properties
N
0 125 250 500
Metres
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

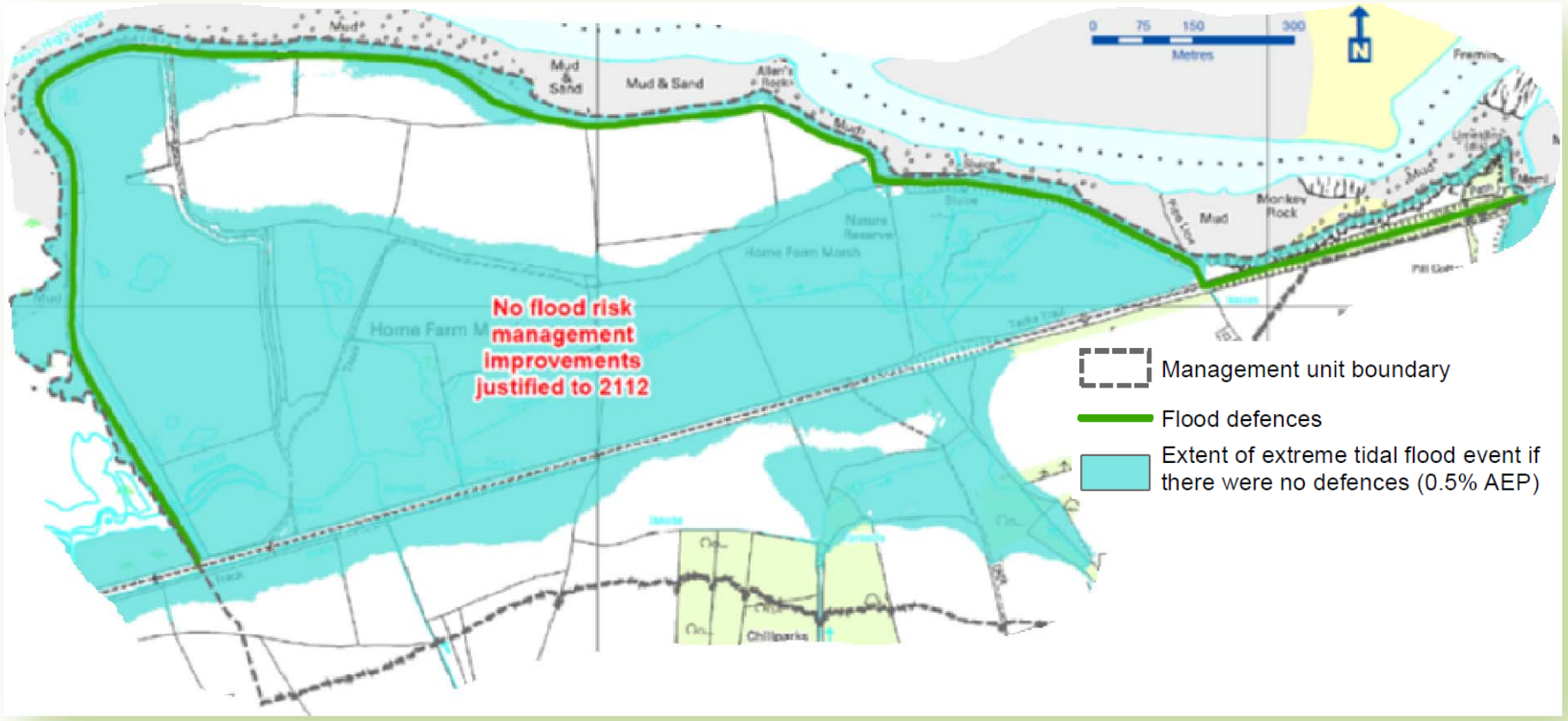
Priority Area: Fremington (Home Farm Marsh)

What is at risk?

This Management Unit is approximately 129 hectares (ha) and there are no properties. The majority of the flood defences are embankments.

Our Initial Findings

- We should review our flood defence management practices for embankments in the area.
- There may be an opportunity for creating 40ha of inter-tidal habitat subject to consultation with the landowner.
- We would need to monitor the possible impact on the Tarka trail and if necessary take steps to protect it.
- Natural England has a Higher Level Stewardship agreement in place with the Gaia Trust for this site to manage the wet grassland for estuarine bird interest. This agreement would be consistent with creating a new saltmarsh in the area.


No flood risk management improvements justified to 2112
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)
Mud & Sand
Mud
Monkey Rock
Home Farm Marsh
Nature Reserve
Chillparks
0 75 150 300
Metres
N

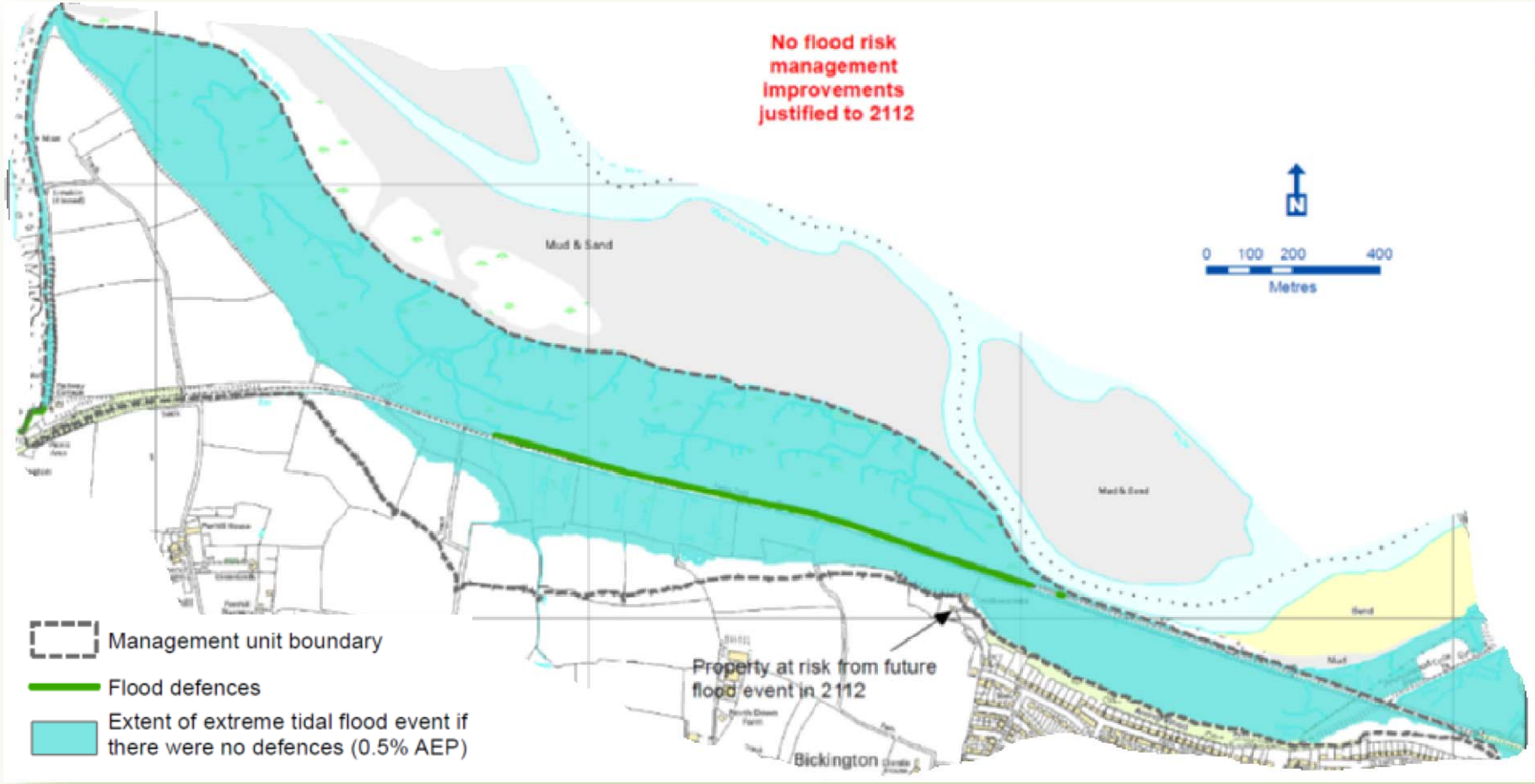
Priority Area: Hollowcombe (Penhill)

What is at risk?

This Management Unit is approximately 145 hectares (ha). There are no properties at risk today, although one property will may be at risk in the future as a result of sea level rise. The majority of the flood defences are embankments maintained by the local authority.

Our Initial Findings

- We should review our flood defence management practices.
- We would need to consult in detail with the landowners about a potential opportunity for habitat creation which would cause loss of grazing.
- The local authority could review the site and in the future consider individual property protection measures. However, maintaining the Tarka Trail would by default hold the flood defence here.
- There is already saltmarsh and any potential inter-tidal habitat creation is limited to landward of the dismantled railway line.
- Any new inter-tidal habitat may also cover the Tarka Trail Fields County Wildlife Site which is designated for its grazing marsh, notable plant species and its network of ditches, some of which are brackish. If changes were to be made, we would assess the effect on the landscape.
- Potential housing development nearby may provide a source of Partnership Funding contributions to any potential scheme.


No flood risk management improvements justified to 2112
Mud & Sand
N
0 100 200 400
Metres
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)
Property at risk from future flood event in 2112
Bickington

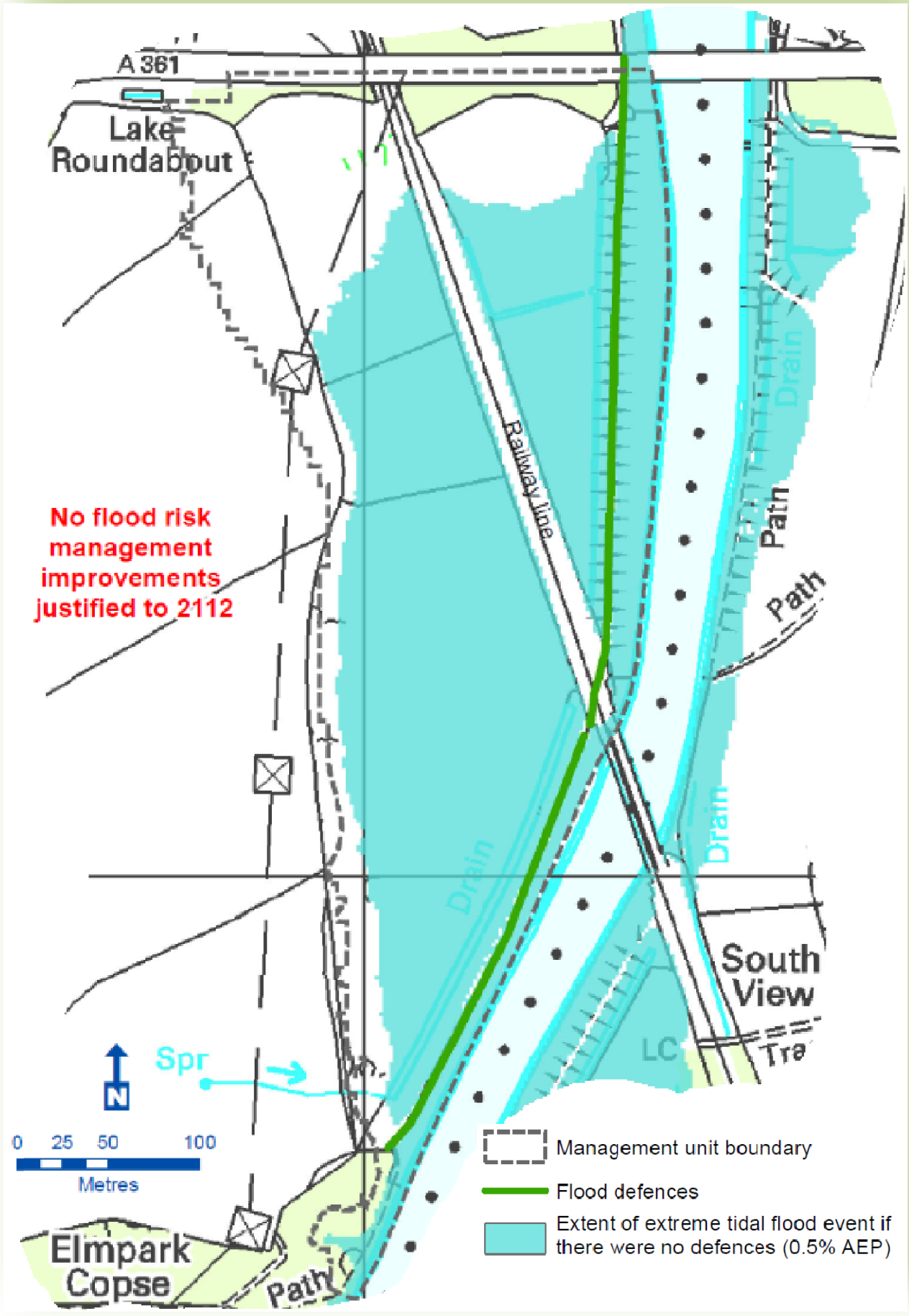
Priority Area: South of A39

What is at risk?

This Management Unit is approximately 10 hectares (ha) and there are no properties potentially at risk now or in the future.

Our Initial Findings

- We should review our flood defence management practices.
- There are opportunities for 5ha of inter-tidal habitat creation subject to reaching agreement with local landowners. Our review would incorporate further investigation and consultation with the landowner.
- We would need to monitor the impact of any changes on the railway embankment and if necessary take actions to protect it.
- We could also formalise an agreement with Natural England and the landowner to formally recognise the habitat which has already been developed.
- There is an unconfirmed County Wildlife Site called Rumsam Marsh in the Management Unit, the boundary of which is undefined. This area may also be internationally important as flood plain grazing marsh.


A 361
Lake Roundabout
No flood risk management improvements justified to 2112
Railway line
Drain
Path
Path
Drain
Drain
South View
LC
Tra
Spr
N
0 25 50 100
Metres
Elmpark Copse
Path
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

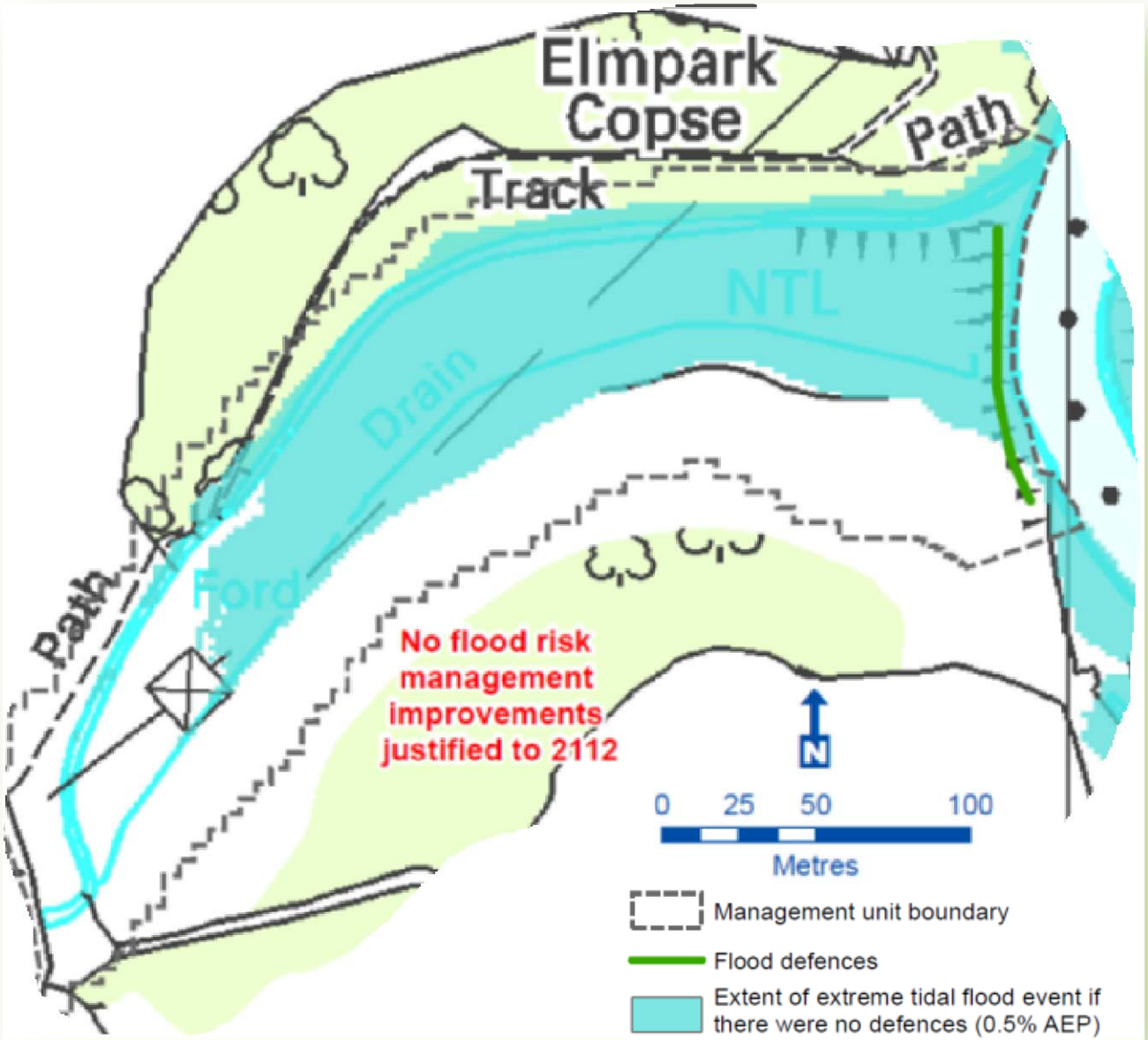
Priority Area: Shorleigh Bridge

What is at risk?

This Management Unit is rural and there are no properties potentially at risk of flooding now or in the future. The existing flood defences are embankments that are privately maintained.

Our Initial Findings

- We should review our flood defence management practices.
- We would need to discuss the potential for 1 hectare (ha) of inter-tidal habitat creation with the landowner.
- The loss of some Grade 3 and 4 agricultural land is likely.


Elmpark
Copse
Path
Track
NTL
Drain
Ford
Path
No flood risk
management
improvements
justified to 2112
N
0 25 50 100
Metres
Management unit boundary
Flood defences
Extent of extreme tidal flood event if
there were no defences (0.5% AEP)

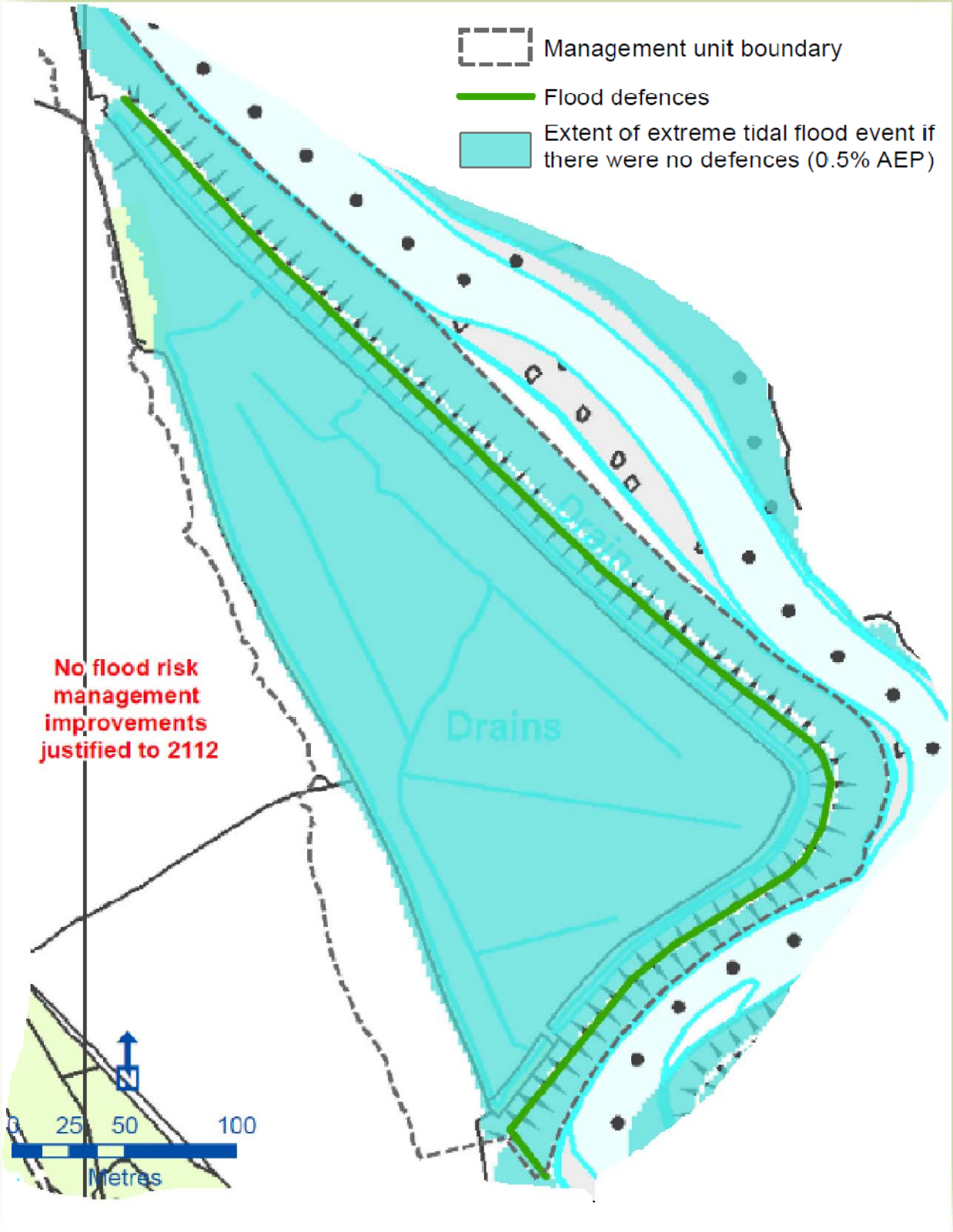
Priority Area: Tawstock Park

What is at risk?

This management unit is approximately 8 hectares (ha) and there are no properties.

Our Initial Findings

- We should review our flood defence management practices.
- There may be an opportunity for creation of 5 hectares (ha) of inter-tidal habitat following our review.
- Breaching of existing defences would result in the loss of Grade 4 agricultural land which we would need to have the support of the landowner prior to any works going ahead.


Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)
Drains
No flood risk management improvements justified to 2112
N
0
25
50
100
Metres

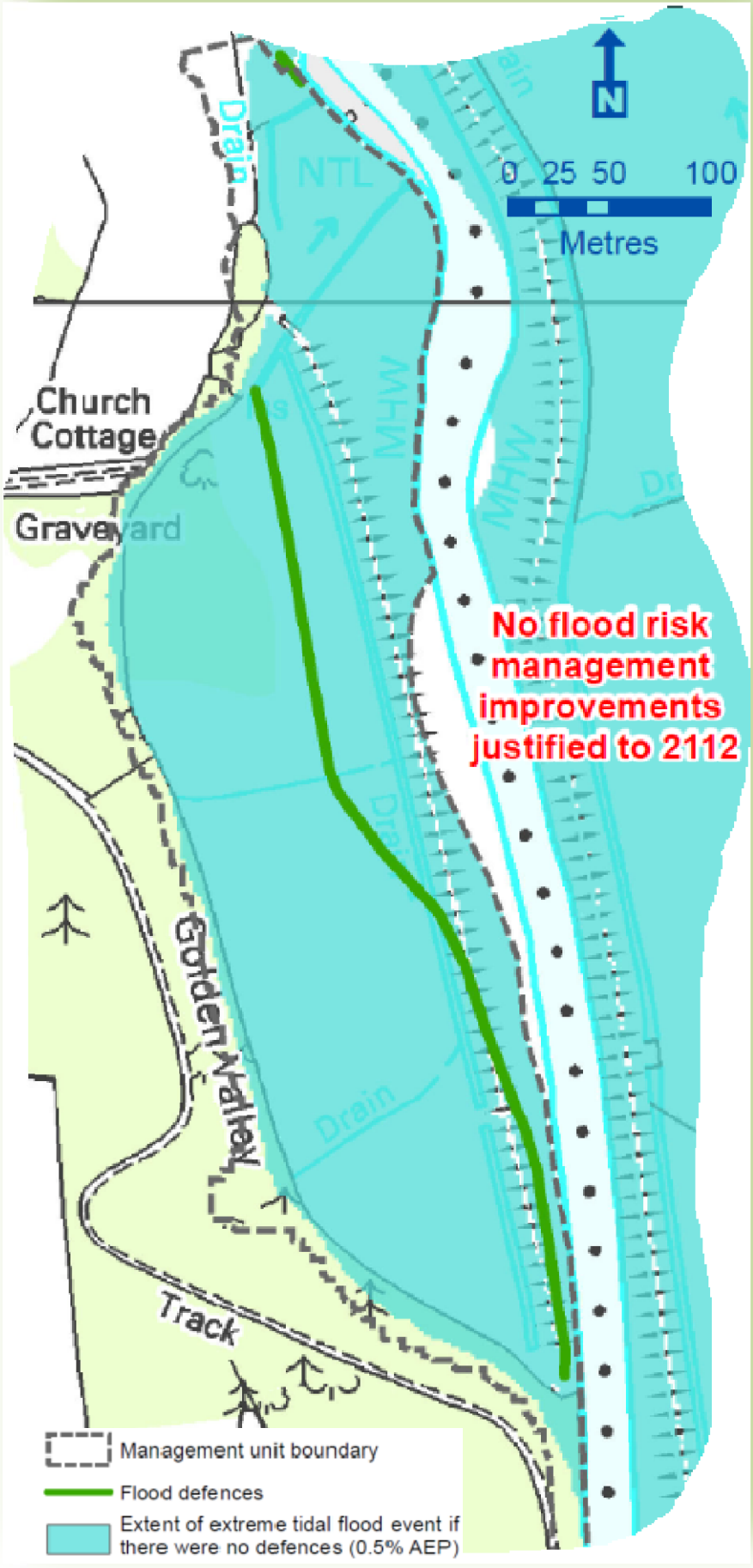
Priority Area: Tawstock

What is at risk?

This Management Unit is approximately 8 hectares (ha) and there are no properties. The majority of the defences are embankments that are privately maintained. This area is also vulnerable to fluvial flooding.

Our Initial Findings

- We should review our flood defence management practices.
- We would need to discuss the potential opportunity to create 5ha of inter-tidal habitat with the landowner.
- There would be loss of Grade 4 agricultural land if inter-tidal habitat was created in this area.
- Potential impacts to the unconfirmed Wildlife Site are currently unknown and will need to be evaluated.


N
0 25 50 100
Metres
Drain
NTL
MHW
MHW
Church Cottage
Graveyard
No flood risk management improvements justified to 2112
Golden Valley
Drain
Track
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

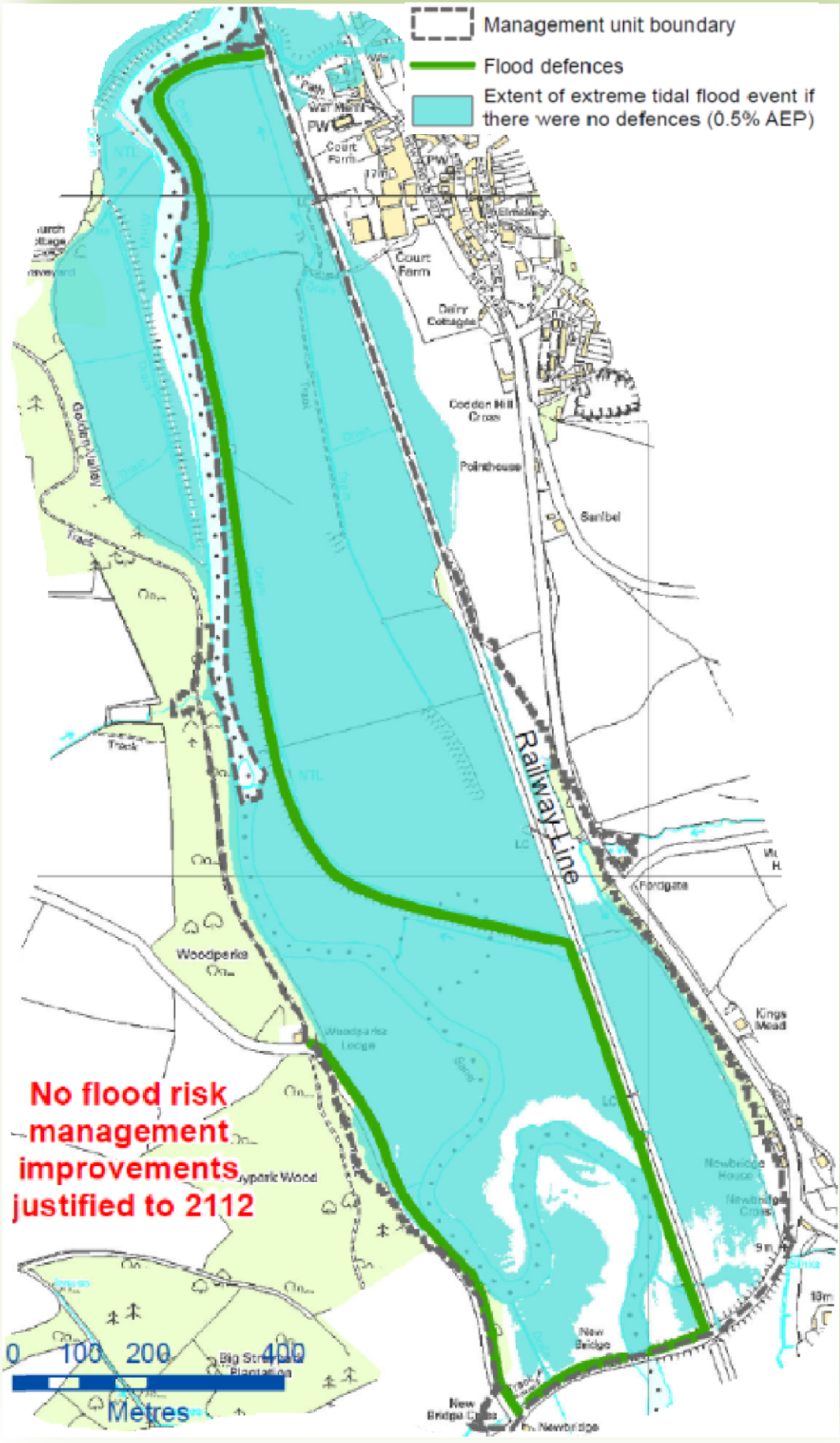
Priority Area: Overton (Tawstock)

What is at risk?

This Management Unit is approximately 79 hectares (ha) and there are no properties potentially at risk now or in the future. The majority of the flood defences are embankments that are privately maintained.

Our Initial Findings

- We should review our flood defence management practices.
- We would need to discuss in more detail with the landowner the opportunity to create 25ha of new inter-tidal habitat.
- There would be a loss of Grade 4 agricultural land if inter-tidal habitat was created.
- Potential impacts to the unconfirmed Wildlife Site are currently unknown and will need to be evaluated.
- Ancient woodland and the County Wildlife Site are unlikely to be affected by the creation of inter-tidal habitat.


Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)
Court Farm
Dairy Cottages
Coddon Hill Cross
Poplar House
Sanibel
Railway Line
Fordgate
Woodperks
Kings Mead
Newbridge House
New Bridge
No flood risk management improvements justified to 2112
0 100 200 400
Metres

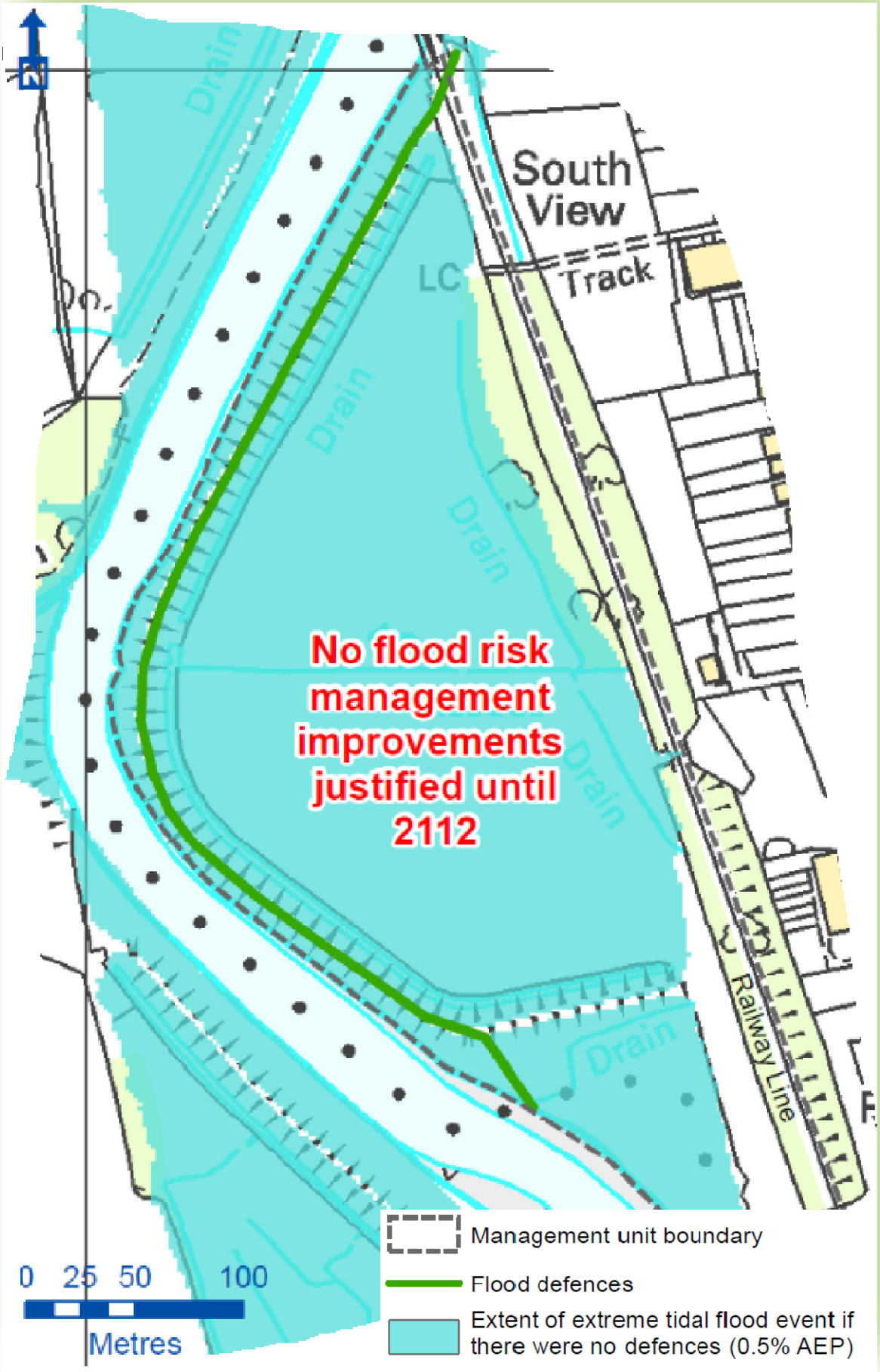
Priority Area: Chestwood

What is at risk?

This Management Unit is approximately 9 hectares (ha) and there are no properties at risk. A railway embankment defines the limit of the floodplain.

Our Initial Findings

- We should review our flood defence management practices.
- We would need to discuss this in more detail the opportunity to create 5ha of inter-tidal habitat with the landowners.
- We would need to obtain the support of Network Rail to use the railway embankment as a primary flood defence, or find an alternative solution.
- There would be a loss of Grade 4 agricultural land which would need to be agreed with the landowner.
- There may be potential impacts to the unconfirmed Wildlife Site, which would need to be evaluated.


N
Drain
South View
Track
LC
Drain
Drain
Drain
Drain
No flood risk management improvements justified until 2112
Railway Line
0 25 50 100
Metres
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

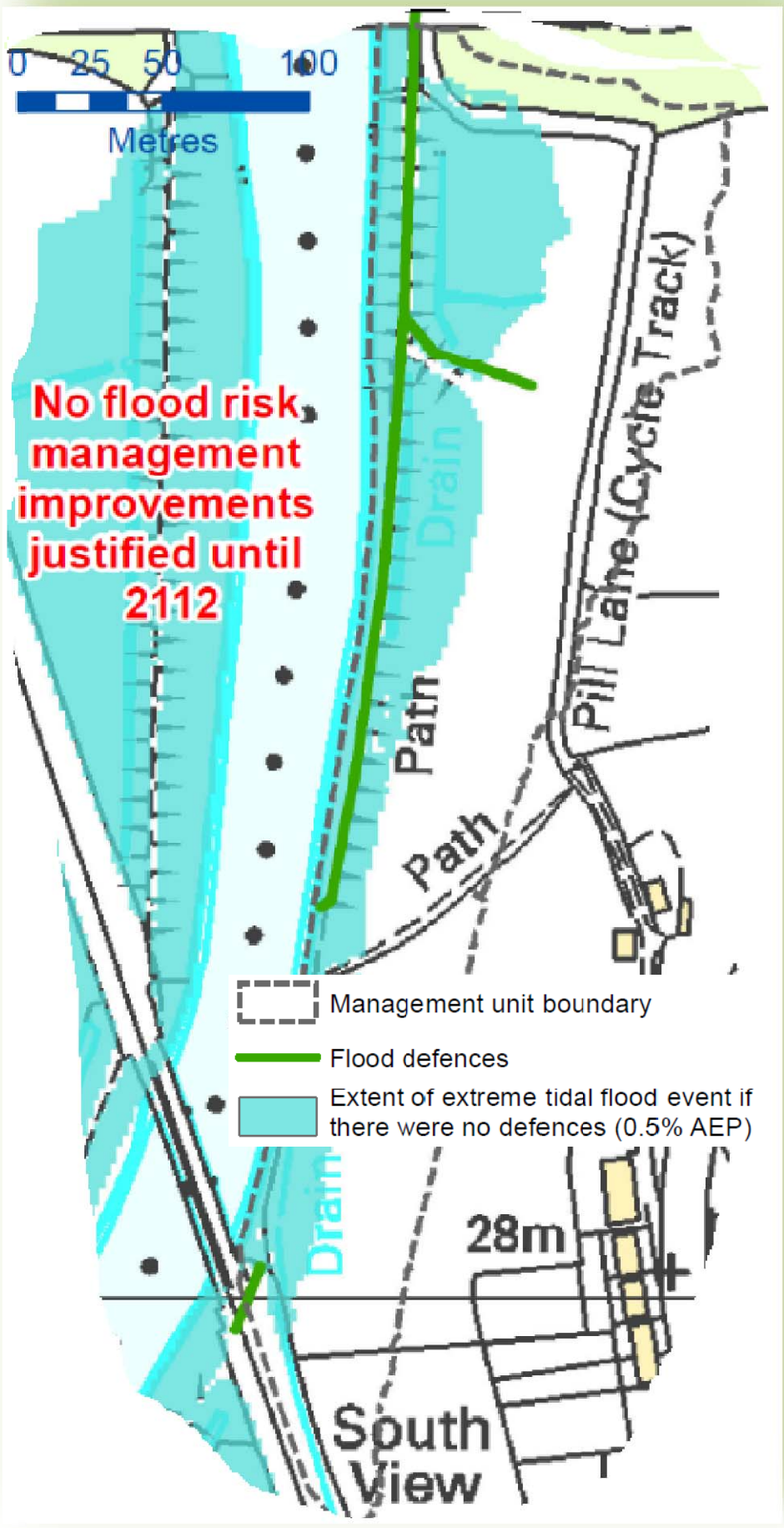
Priority Area: North Chestwood

What is at risk?

This Management Unit is approximately 4 hectares (ha) and there are no properties. The majority of the flood defences are embankments.

Our Initial Findings

- We should review our flood defence management practices.
- Following our review, there may be an opportunity for a small area of habitat creation subject to landowner agreement.
- There would be loss of Grade 4 agricultural land which would need landowner support.
- Change to the County Wildlife Site (CWS) is unlikely to be significant as the CWS is partly designated for its saltmarsh habitat. However, this would need to be evaluated with an environmental assessment of the proposed project.


0 25 50 100
Metres
No flood risk management improvements justified until 2112
Drain
Pill Lane (Cycle Track)
Path
Path
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)
Drain
28m
South View

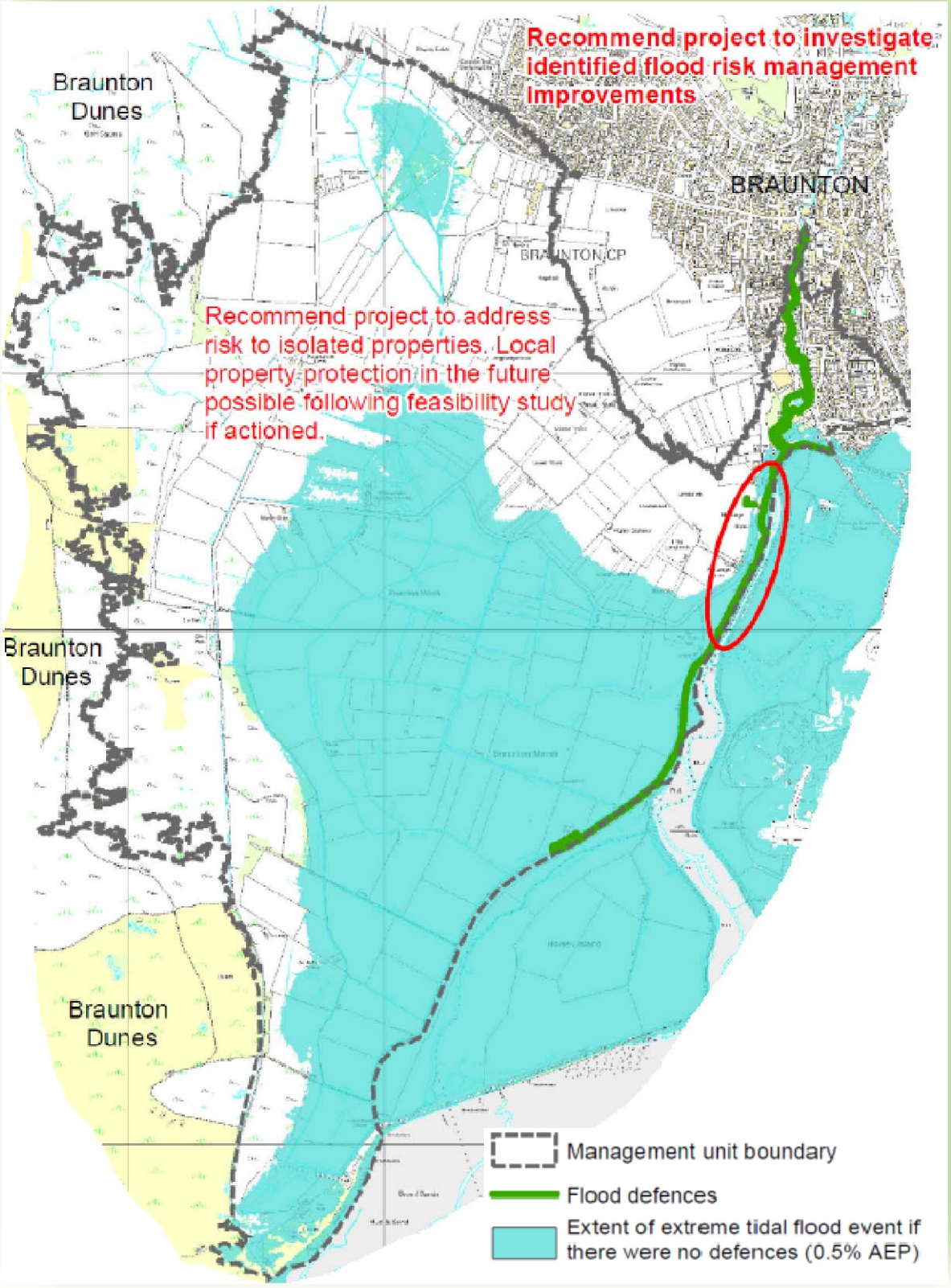
Priority Area: Braunton Marsh

What is at risk?

This Management Unit is approximately 750 hectares (ha) and there are potentially 13 properties at risk.

Our Initial Findings

- There is some uncertainty on flood risk to the marsh due to lack of detailed records. A detailed modelling study we would need to be undertaken to confirm flood risk in the area, .
- Using the information made available it seems that the current maintenance of the flood defences will need to change.
- Isolated properties would still need to be protected.
- Changes would need to be agreed with the Internal Drainage Board and Braunton Marsh Commissioners as they are likely to affect the grazing of this area.
- There may be potential impacts on environmentally designated features. This would need to be assessed with an environmental assessment of any proposed changes.
- In particular, the potential impact to the hydrological regime of the marshes would need to be investigated.


Recommend project to investigate identified flood risk management improvements
Braunton Dunes
BRAUNTON
BRAUNTON CP
Recommend project to address risk to isolated properties. Local property protection in the future possible following feasibility study if actioned.
Braunton Dunes
Braunton Dunes
Management unit boundary
Flood defences
Extent of extreme tidal flood event if there were no defences (0.5% AEP)

Priority Area Summary

Name	Ownership of flood defences			By 2022		
	Environment Agency	Local Authority	Private	Possible site for review of management practice	Potential Flood Defence works	Potential habitat creation opportunities
Northam Burrows		*	*		Y	
Northam			*		Y	
Half Penny Bridge	*			Y	Y	Y
Salterns			*	Y		Y
Bideford right bank	*	*	*		Y	
Yelland (Instow Barton)	*	*	*		Y	Y
Fremington (Home Farm)	*	*	*			Y
Hollowcombe (Penhill)		*		Y		Y
South of A39	*		*	Y		Y
Shorleigh Bridge			*	Y		Y
Tawstock Park			*	Y		Y
Tawstock			*	Y		Y
Overton			*	Y		Y
Chestwood			*	Y		Y
North Chestwood	*		*	Y		Y
Braunton Marshes	*	*	*		Y	

Glossary of Terms

AONB	An Area of Outstanding Natural Beauty (AONB) is an area of countryside considered to have significant landscape value in England, Wales or Northern Ireland
Coastal defence	Flood defence located where protection from flooding due to tide, storm surge of the sea and wave action is a risk.
Erosion	Coastal erosion is the wearing-away of land and the removal of beach or dune sediments by wave action or currents. It can be gradual or dramatic, such as following a major storm or a cliff fall.
Fluvial flooding	Flooding as a result of extreme river flows.
Individual property protection	Individual property protection includes measures such as door barriers, air brick covers, non-return valves, toilet bungs, sealing around service pipes and waterproofing of walls. Grants can be available through local authorities.
Inter-tidal habitat	Inter-tidal habitats are those that occur between low and high water and are therefore alternately exposed to the air and wetting. They include sandbanks and saltmarsh, which can be particularly rich and diverse in species that they support.
LNR	Local Nature Reserve, a type of nature reserve in the United Kingdom

Probability	Probability is the measure of expectation and is also known as the likelihood or chance. Floods are often described in terms of the chance of occurring in any one year, such as a 1 in 100 or a 1% annual probability of occurring.
Resilience	The ability to withstand extreme events and circumstances.
Risk	Although the term risk is often used in place of probability, it is used technically in the context of flood and coastal erosion to describe the combination of probability and consequence. The risk for 100 houses, each with a 1 in 50 (2%) annual probability of being flooded, would be the same as for 50 houses, each having a 1 in 25 (4%) annual probability.
SAC	Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive
Shoreline Management Plan (SMP)	A Shoreline Management Plan sets out the policy for managing our coastline and how we respond to the threat of coastal flooding and the risk of erosion. It is based on large-scale assessment of the risks associated with coastal processes and helps reduce these risks to people and the developed, historic and natural environments. North Devon and Somerset Coastal Advisory Group (NDASCAG) (2010) Shoreline Management Plan Review (SMP2), Hartland Point to Anchor Head.
SSSI	A Site of Special Scientific Interest (SSSI) is a conservation designation denoting a protected area in the United Kingdom

Standard of protection	The standard of protection of a flood defence refers to the probability of the largest flood that it is designed to withstand. Hence we can expect a 1 in 100 (1%) standard of defence to be overtopped, on average, once every 100 years.
Sustainable	There are many definitions of the term ‘sustainable’, which recognise that the economy, environment and society are interconnected and that present needs should not be met at the expense of the future. A decision now that commits future generations to excessive costs, or leads to irrevocable environmental damage, is unsustainable.
Tidal flooding	Tidal flooding occurs when sea level is raised, due to tides and usually other factors, above the level of natural or man-made defences. Other factors include the weather, which produces surge tides and waves, tsunamis and sea level rise. Tidal conditions can also exacerbate freshwater and sewer flooding by affecting free gravity drainage to the sea.

Next steps

Where possible we will look in more detail where property is currently at risk and promote works ourselves, or raise awareness of the risk to others, to reach a solution at the earliest opportunity

Where a change in the management of existing flood defences has been identified as a possible option we will need to discuss it in more detail with affected landowners.

This summary document aims to raise awareness of the risks.

This document identifies areas of interest only and no specific works are proposed at this stage.

We will make contact with those likely to be affected if any of the findings identify actions that are likely to be taken forward.

Your Environment Agency contact is:

Martin Davies,

Environment Agency,

Manley House, Kestrel Way, Sowton, Exeter, EX2 7LQ

martin.davies1@environment-agency.gov.uk

Would you like to find out more about the Environment Agency or about your environment?

Then call us on
03708 506 506* (Mon–Fri 8–6)

email
enquiries@environment–agency.gov.uk

or visit our website
www.environment–agency.gov.uk

incident hotline 0800 80 70 60 (24hrs)
floodline 0845 988 1188