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4 December 2011

Your ref 36252

Dear Catherine Whitehead

I am writing in response to your reply, of 27 October 2011.

I have to say I was confused by some of your reply, and parts of it seemed wrong.

You state that saltmarsh erodes from the seaward side. I regularly walk by the sea wall where I can see saltmarsh and this is just not true. Here is a photograph which clearly shows saltmarsh closer to the wall has been eroded whilst saltmarsh further away from the wall has not.

Holes where crabs have burrowed, causing erosion, can just be seen in the above photograph

but a closeup makes things clear.

You say that there are a number of factors contributing to the loss of saltmarsh, then proceed to just talk about coastal squeeze!

To the best of my knowledge coastal squeeze is a solely UK idea, no other country believes in it.

So I am making a FOI request for you to disclose

1. any evidence that coastal squeeze exists
2. any evidence that coastal squeeze "hypothesis" is accepted in any other country in the world

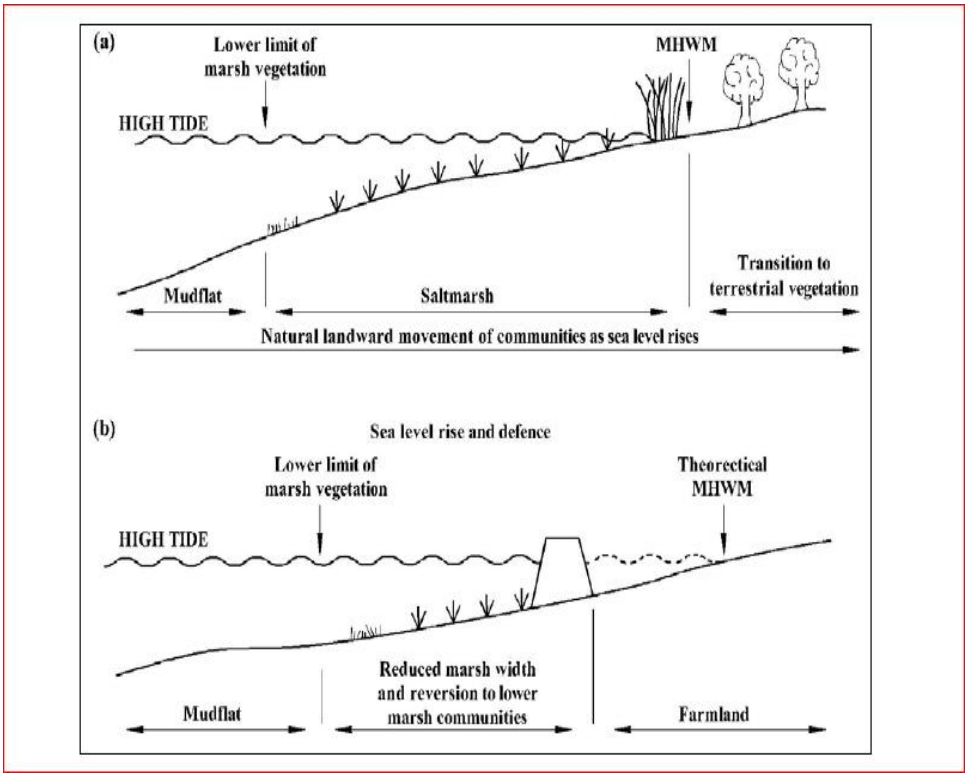
You talk about saltmarsh rolling inland in response to rising sea levels. If this were so then there would just be a thin band of salt marsh near the coast, the rest having been killed by rising sea level.

But this simply is not the case. Time for another picture.

It can be clearly seen that the saltmarsh is flat, and so are the mudflats near Peter Point.

But in the Twizzle near the marina, the mud is obviously not flat as there is a channel with enough water for boats. Yet in the background the saltmarsh can clearly seen to be flat.

The following diagram is sometimes used to illustrate the process of coastal squeeze.



But it is clearly so misleading as to be completely wrong.

1. The salt marsh is shown as sloping upwards, but we can see from photographs it is flat.
2. The land inshore is shown as higher than the salt marsh but land behind sea walls is lower than the saltmarsh.

You state that saltmarsh accreting does not guarantee rising saltmarsh heights it just means gaining sediment.

Where does the sediment go if it does not cause the saltmarsh to rise?

It is generally accepted that sea levels have been rising since the last ice age. Saltmarsh is flat as it has risen, due to sedimentation, with rising sea levels. Saltmarsh is now higher than adjacent embanked land because of the rise due to sedimentation. Many sea walls were built around 1660-1700 and with sea level rise of 1-2mm/year the saltmarsh would be around 1 meter higher than adjacent farmland. Anyone who walks along a sea wall with saltmarsh on one side and a field on the other can see this is so.

The recent Natural England report shows that from 1998 to 2008 there was a net gain in saltmarsh essex and south suffolk (the area covered in the SMP) so it is completely wrong to say the erosion is the predominate trend in Essex and South Suffolk.

You talk about a "naturally functioning coast". This seems to be a sweeping generalisation. At best you are only talking about a low lying muddy, coast with estuaries or inlets.

Your naturally functioning coast does not describe

- the cliffs of dover
- the rocky coast of Cornwall, wales and Scotland

You say the idea of coastal squeeze can not be dismissed as easily as I say.

Why not?

Science took on board Karl Popper's notion of falsifiability. It is impossible to ever prove an idea correct, yet a single incorrect prediction dooms a theory.

You have dismissed this problem with no justification at all!

I have a PhD in physics. I do not recognise any science in what I have seen recently from EA, NE, DEFRA concerning

- sea level rise
- salt marsh loss
- claims of unsustainablity of maintaining sea walls.

If I had to classify what I have seen I would say it was "chat" or "gossip".

Full disclosure of evidence and repeatability of results are required in science. What seems to happen here is non disclosure (almost a complete refusal to disclose in case of EA) and a series of studies which give widely different results.

As the latest Natural England report shows saltmarsh has grown back. Sea levels have been rising. This seems to me to be a terminal problem for coastal squeeze. Perhaps you might like to add to the information you supply me under FOI about coastal squeeze specific details as to why saltmarsh regrowth at at time of rising sea levels is not a problem for the coastal squeeze hypothesis.

The InsideOut program showed that ragworm and crabs live in the saltmarsh. The crab holes can be clearly seen in the photographs above and by walking along a sea wall near saltmarsh.

Are you saying the burrowing of crabs does not cause saltmarsh erosion at all?

I make a further FOI request for disclosure of evidence of the extent of saltmarsh erosion caused by crabs or ragworm or any other organism.

Saltmarsh will have been naturally created when rising sea levels cause the sea to cover higher land. But the land would have existing fresh water vegetation which gets replaced with saltmarsh. A particular scenario where this may happen is in estuaries of a river where reeds grow in fresh water or brackish marsh along the sides of the river.

This is not the situation that happens with managed realignment

- The land is lower than existing saltmarsh
- The land is not covered in vegetation (at Devereux 1 site it is just mud).

You say that schemes that enable climate change mitigation or adaption will be supported by you.

Why?

I suggest that the climate change you are talking about is solely the predictions made by computer programs and not based on actual observational evidence.

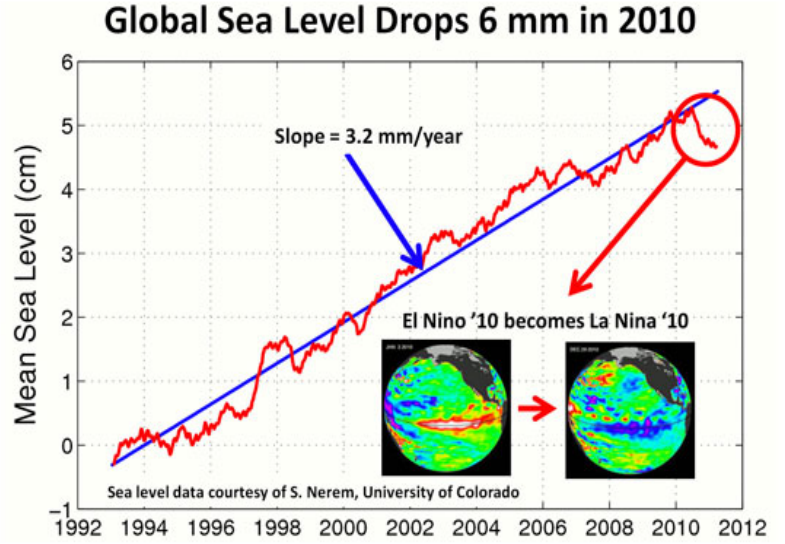
As both the DEFRA2006 and DEFRA2009 "predictions" started from 1990, it is possible to compare predictions with reality from 1990 to 2011. Even the low DEFRA2009 is still higher than observed rate of sea level rise. In addition both DEFRA2006 and DEFRA2009 assume that the rate of sea level rise will accelerate. There is no evidence of this at all.

Data from jason buoys shows global sea levels actually fell in 2010/2011

this webpage http://www.jpl.nasa.gov/news/news.cfm?release=2011-262

has this graph

NASA Satellites Detect Pothole on Road to Higher Seas



The red line in this image shows the long-term increase in global sea level since satellite altimeters began measuring it in the early 1990s. Since then, sea level has risen by a little more than an inch each decade, or about 3 millimeters per year. While most years have recorded a rise in global sea level, the recent drop of nearly a quarter of an inch, or half a centimeter, is attributable to the switch from El Niño to La Niña conditions in the Pacific. The insets show sea level changes in the Pacific Ocean caused by the recent El Niño and La Niña (see http://sealevel.jpl.nasa.gov/science/elninopdo for more information on these images). Image credit: S. Nerem, University of Colorado

You say that plans would be amended to reflect anomalies between projects and observations.

EA have released

> Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities

which doesn't appear to show any sign of looking at observations at all.

This documents claim that the rate of sea level rise has accelerated to 3mm/year since 1992.

Why then is the trend at Felixstowe falling? There are only about 30 years of observations at Felixstowe and Charles Beardall, Anglian Director of EA, wrote to Douglas Carswell, my mp, cautioning that the dataset is of short duration. But it's about 50% longer than the dataset since 1992.

For you information a mean trend line is not observed it is calculated from observations. From my correspondence with Charles Beardall and Mark Johnston it is blindingly obvious that they do not have the ability to perform this calculation (even though I have shown them how and it requires a single function in Excel or R).

You say the precautionary principle means that you should be pragmatic in planning for the future

and not plan for the worst case scenario.

Actually I think precautionary principle means exactly that you do plan for the worst case scenario, and maybe a bit more to be on the safe side. But it seems entirely irrational to me to plan for rising sea levels by making holes in sea walls.

I believe the Dutch are using the precautionary principle to plan for 1.3m sea level rise and are raising sea walls.

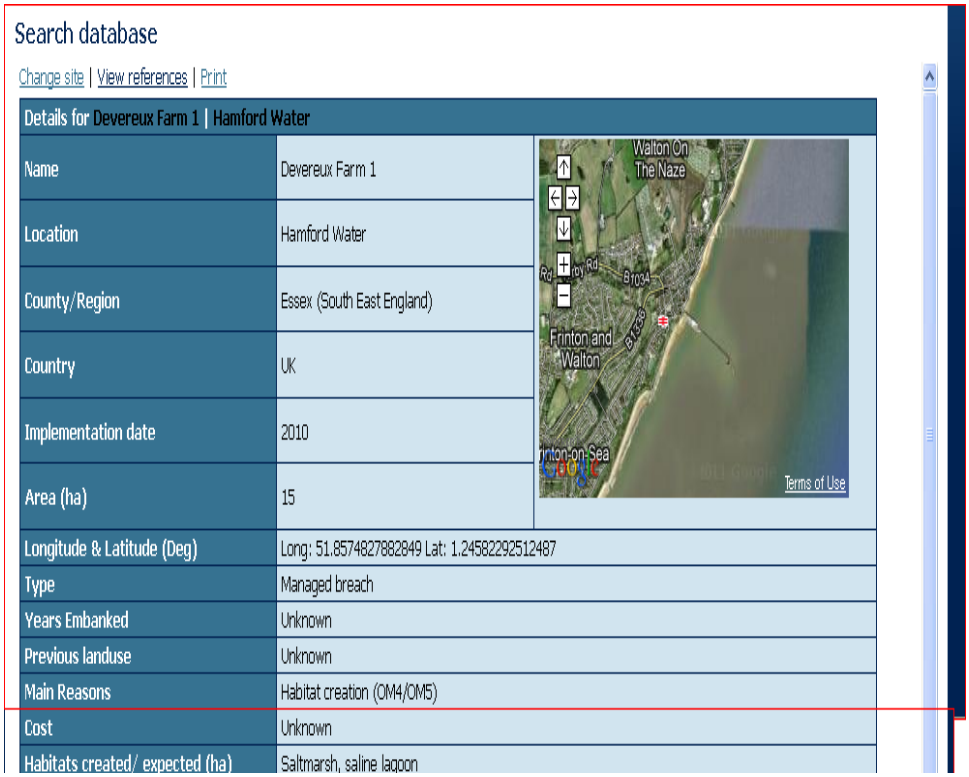
You state that the sea wall at Devereux Farm, like other areas, would have been identified on the basis to vulnerability to erosion.

I quote here from the email I sent you colleague Andrew Millar (and copied you)

> The idea that sea wall between quay lane, past island lane an on titchmarsh marina is not sustainable is either crazy and or delusional. The wall is clearly very soundly constructed and also protected from the full effects of the sea by both the Naze and Horsey Island.
>
> You may know EA have decided not to go ahead with this Devereux 2 breach in part due to opposition from local people. EA have always maintained that the flooding of Devereux Farm was due to the need to create intertidal habitat. I believe there will be a lot of very angry people in Kirby, Frinton,Walton,Thorpe area if it turns out that the actual reason for breaching the wall was for "flood management".
>
> There is very strong feeling locally that bodies like NE, EA, DEFRA mislead (at best) the public in order to push through their schemes.
>
> It is quite an interesting idea managing flood by making holes in sea walls.
>
> In the planning application to TDC for making the breaches EA state they initially considered an area to the west of Quay Lane (near marsh house) where the sea wall is substantially lower than between Quay Lane and Titchmarsh Marina
>
> This is also an interesting contribution to flood management, leave a lower wall and make a hole in a higher one.
>
> Mark Johnson of Environment Agency called me for a chat last week I got the impression from him that Devereux Farm project was actually pre SMP and was a sort of prototype advanced by David Collins who you can read about here
>
> http:www.linkedin.compubdavid-collins27838407 http:elmtwo.comcurriculum-vitae
>
> David Collins certainly seems to have take a special interest in the Blyth!
>
> Given the variety of reasons that have been put forward for the Devereux project and that it was being lead by EA not NE
>
> I would like to end by making an FOI request for
>
> 1 any evidence that the sea wall between Quay Lane and Titchmarsh Marina at Devereux Farm Kirby le Soken was at risk of collapse such that it was necessary to breach the wall for flood management

2 any evidence that the actual policy that lead decision to make breach at Devereux Farm was flood management. By this I mean some sort of official document which can be sourced from an official archive.

why at this site www.abpmer.netomreg



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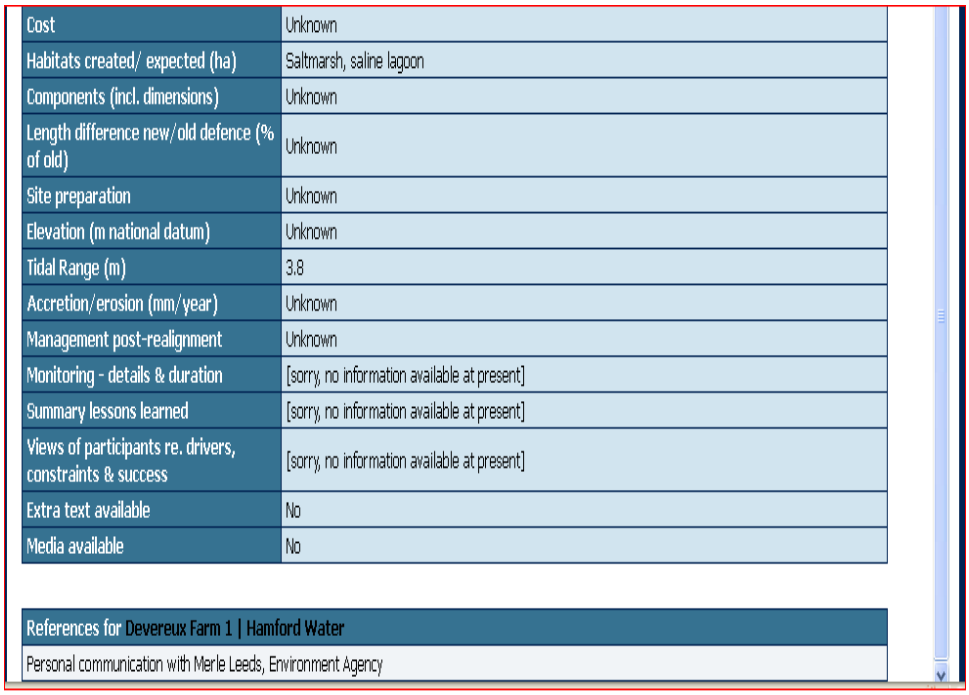
Details for Devereux Farm 1 | Hamford Water	
Name	Devereux Farm 1
Location	Hamford Water
County/Region	Essex (South East England)
Country	UK
Implementation date	2010
Area (ha)	15
Longitude & Latitude (Deg)	Long: 51.8574827882849 Lat: 1.24582292512487
Type	Managed breach
Years Embanked	Unknown
Previous landuse	Unknown
Main Reasons	Habitat creation (OM4/OM5)
Cost	Unknown
Habitats created/ expected (ha)	Saltmarsh, saline lagoon



Cost	Unknown
Habitats created/ expected (ha)	Saltmarsh, saline lagoon
Components (incl. dimensions)	Unknown
Length difference new/old defence (% of old)	Unknown
Site preparation	Unknown
Elevation (m national datum)	Unknown
Tidal Range (m)	3.8
Accretion/erosion (mm/year)	Unknown
Management post-realignment	Unknown
Monitoring - details & duration	[sorry, no information available at present]
Summary lessons learned	[sorry, no information available at present]
Views of participants re. drivers, constraints & success	[sorry, no information available at present]
Extra text available	No
Media available	No

References for Devereux Farm 1 | Hamford Water
Personal communication with Merle Leeds, Environment Agency

is the reason given for Devereux project as habitat creation?

As David Eagle is getting compensation base on 27ha why is the area given as 15?

I suggest that there are 2 drivers. The first is DEFRA has set a target for 100ha/year of saltmarsh to be created, 40 of this to be created in Anglian regions.

The basis for this was Burd's report which suggest 100ha of saltmarsh was being lost nationally.

DEFRA's target seems to ignore any salt marsh that grows back naturally.

The second driver is that someone (David Collins?) has decided on the basis of no evidence that the cost maintaining sea walls is unsustainable and this has become accepted as policy.

I suggest that without the cost of knocking holes in sea walls (managed retreat) or taking money from CAP to fund compensation to farmers there is ample money for maintaining sea walls.

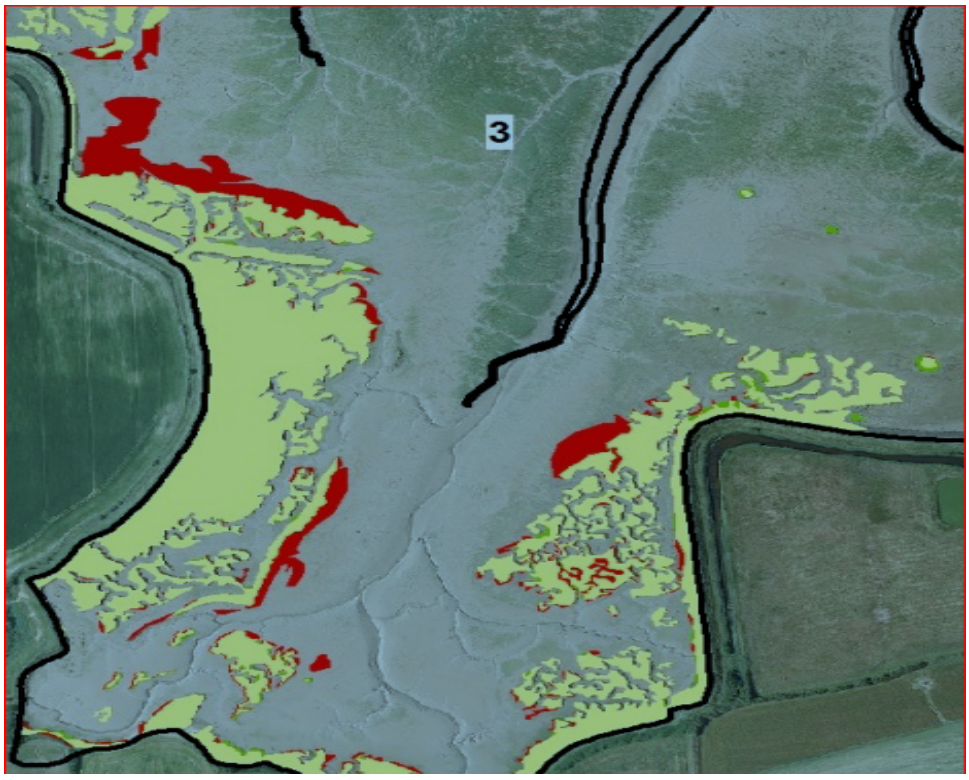
I make a FOI request for any evidence that the cost of maintaining sea walls is unsustainable.

You did not answer my question as to whether authorisation was required for breaching the wall. Instead you talked about the effect on adjacent habitat - which side steps my question. It is my understanding that the wall itself is RAMSAR/SPA protected.

Note although the Devereux 2 breach has been put on hold for the time being, Devereux 1 breach has already been made. This will inevitably weaken the remaining wall and it will eventually collapse. Is the loss of the entire wall from Island Lane to east of the Devereux 1 breach really not significant. If it is what length of wall would have to be lost for it to become significant.

For your information people from the Blyth area have taken legal advice on the issue of breaching walls and have instructed a solicitor to write to Waveny District Council. Presumably any decision there would have a bearing on Devereux Farm.

This is a section of map 94, on page 95 of volume 2 of IECS study of essex saltmarsh.



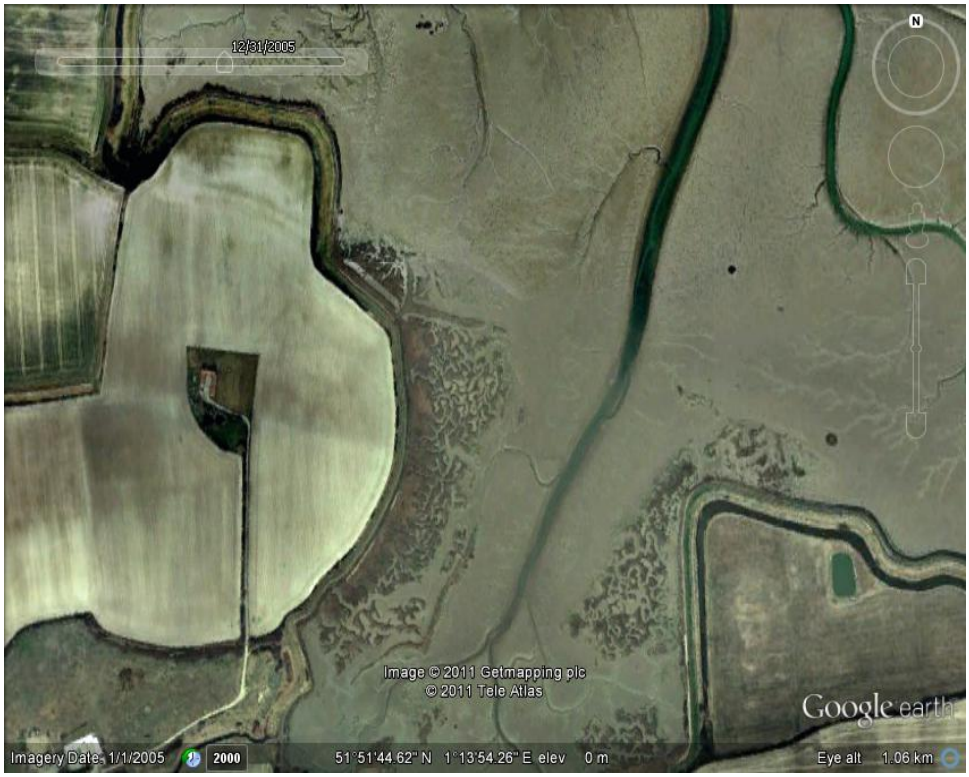
I have issues with the red areas (saltmarsh loss) near Peter Point and by the opposite sea wall.

Google Earth has aerial photos from

31 July 2009

6 November 2006

31 December 2005



31 December 2000

In addition here is an aerial photograph of the Backwaters which I am told was taken around 1959

Now it seems to me that the Google Earth photographs and the one from 1959 are fairly similar. There is more greenery in the 2000 Google Earth photo, but not in the area marked in red in the IECS photo. The erosion might have happened between 1998 and 2000, but this seems unlikely given the 1959 photo.

The 2005 photo shows a lot less greenery, I wonder if there are any seasonal effects at work, given the next photo was taken on 6 November 2011 and the one after that on 31 July 2009.

As I understand it, the first survey (1973) was a byproduct of the plan to build an airport on the Maplin Sands.

This was followed by another survey in 1988 which was analysed by Burd and a further survey in 1998 which was analysed by Cooper.

According to this webpage

http://www.saltmarshmanagementmanual.co.uk/change/ChangeHCCoastSquez.htm

Burd found the area of salt marsh dropped from

876.1 ha by 170.6 ha leaving 705.5 ha.

An average loss of 11.4 ha/year

Cooper found that in 1998 there were 614 ha of saltmarsh remaining which, from Burd's 1988 figure would have meant an average loss of 9.15 ha/year.

But Cooper revised the 1988 figure up to 758.5 which implies an average loss of 7.8ha/year. Which then doubled to about 14.3ha/year from 1988 to 1998.

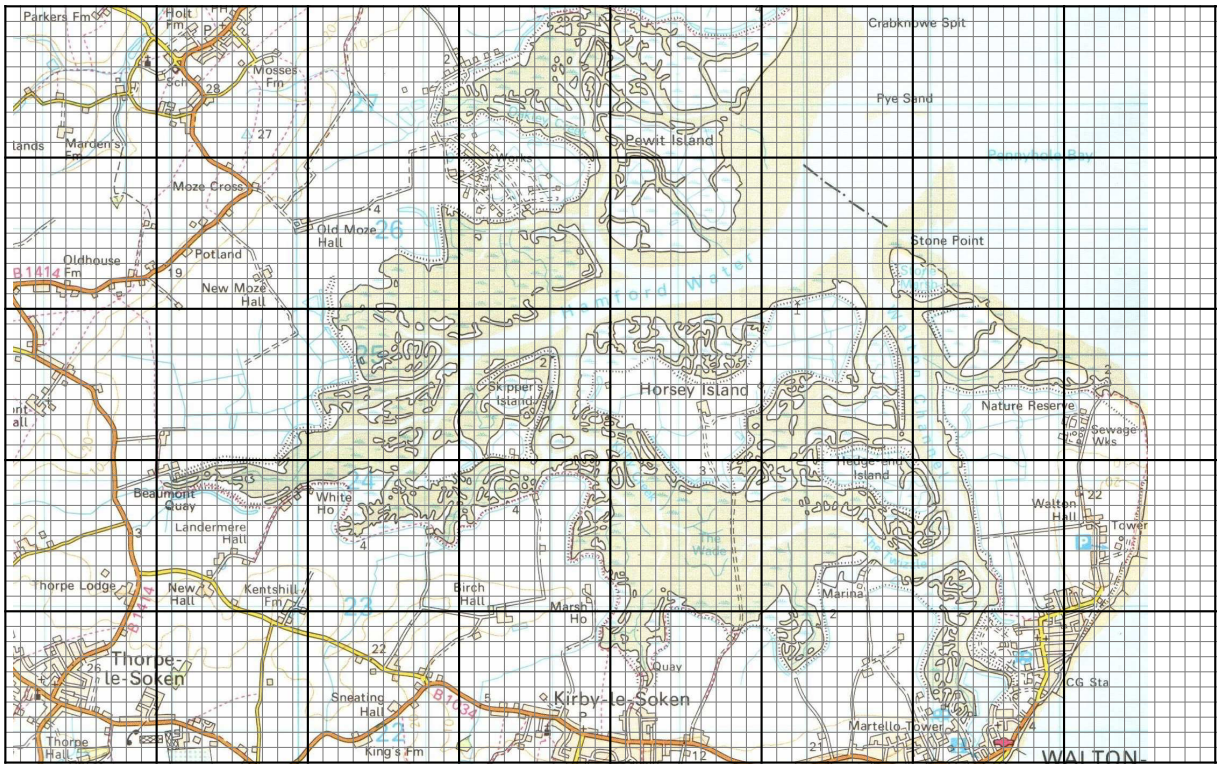
It seems highly unlikely to me that the rate of saltmarsh loss suddenly doubled, if anything it seems the average rate of loss was around 10ha/year over the entire 25 year period.

Except this means we have to believe 262 ha of saltmarsh were lost over 25 years and I don't.

How big is 262 ha is 2.62 km^2 or a bit more than 2 half squares with sides of 1 kilometer.

Here is a map of the area over which I have superimposed a grid which is approximately 100m, so each small square is 100mm^2 or 1ha. Which 262 would you colour in to indicate that they were lost between 1973 and 1998.

Note you will probably have view at at least 150% to see anything useful.



I would say the estimate is at least a factor of 10 to big.

Especially if you look at 1959 photo and compare it with 2009 image from Google Earth. I think you could make a convincing case for no net saltmarsh loss. I suspect that it comes and goes,

dying out a bit in one area and growing back in another.

The authors of IECS report note the dangers of predicting from a linear trend line, then use the linear trend to predict the area of salt marsh in 2060 and 2110.

Oh dear.

For the reason given in the report these numbers are meaningless.

In fact all the fuss was started by people using Burd or Cooper's negative trend and predicting the saltmarsh would all have disappeared in 2041 (page C27 of Essex and South Suffolk SMP). The same page shows the area of saltmarsh in Hamford Water in 2004 as 527.8ha. I remind you IECS find 698.13 ha in 2008.

It seems clear to me that a great deal of time, effort and money has been spend producing documents which have no value at all. In fact it's worse than that as they give official weight to conclusions which are widely wrong. And these widely wrong conclusions are then used to justify spending of millions or billions of taxpayer money.

The report has clearly not been checked for errors, here para is 4.3.7

> 4.3.7 HAMFORD WATER SSSI Maps 93 - 103 show the saltmarsh changes mapped within the Hamford Water SSSI management units. Table 9 shows that of the 694.82ha of saltmarsh present in the Hamford Water SSSI in 1997, a total of 30.80ha was lost due to erosion throughout the SSSI, with 34.11ha gained through accretion. This resulted in a net loss of 3.32ha by 2008, representing 0.5as a gain of 0.30ha/yr in the current study. This was a significantly different outcome compared to the losses of 10.20ha/yr and 14.42ha/yr recorded by Cooper et al (2000) and Royal Haskoning (2006) respectively in previous years.

No No No

if there was a gain of 34.11ha and a loss of 30.80ha then there is a net *GAIN* of 3.31ha not a loss of 3.32ha as 4.3.7 claims.

If there is a gain of 3.31ha over 11 years this is a net gain of 0.30ha/year over 11 years.

IECS found 691.5ha in 1997, Cooper 614ha in 1998, IECS 694ha in 2008.

- Surely this casts massive doubt on the earlier figures. Which means the only thing we know for certain is that salt marsh growing back and there is no reliable evidence that it was ever eroding. This requires that we trust IECS figures and as I have pointed out earlier Google Earth and other aerial photographs cast major doubt on IECS.

- We can only trust the photographs we can see which show no appreciable change between 1959 and 2009.
- If Burd/Cooper figures are wrong then there is no evidence that saltmarsh was being eroded at all, let alone 100ha/year for all of UK.

I was sent a copy of EA UK Saltmarsh Survey 2011 as I was finishing this letter. This survey seems to disagree with both

- Burd and Cooper
- IECS

Looking at the figure for Anglian region in table A.3 on page 57 we see in 1989 Burd found 13689.89 ha, in 2006-2009 EA found 15255.75ha a +10.3this gives an average increase of about 78ha/year.

On the other hand the Burd figure may be wrong as it's too low so the rate of growth might be zero. But this means there was never any great loss in the first place.

Lets take the IECS figure of 0.3ha/year that means 7.5ha over 25 years. If you look back to the map with the grid on this rate of loss (or gain) is roughly equivalent to 1 little square in each of the big squares that cover the backwaters. In 25 years.

This sounds reasonable, though even this is simplistic for as both IECS and Royal Haskoning have noted the salt marsh is in dynamic equilibrium.

In summary

- If there is no acceleration in the rate of sea level rise, and saltmarsh has grown back in spite of the current rate of sea level rise there seems to be no justification for Managed Realignment at all.
- On the other hand if the rate of sea level rise does accelerate at the rate predicted by DEFRA, certainly DEFRA2006, then any saltmarsh will be killed when the rate of sea level rise exceeds the rate of sea level rise. I have a letter from Charles Beardall in which he says he can not say any saltmarsh created at Devereux farm will still exist in 50 years time.
- The saltmarsh surveys appear to be contradictory and wrong and not showing any evidence for salt marsh loss.
- The claim that the sea wall between Quay Lane and Titchmarsh marina is vulnerable to erosion and so must be "managed realigned" is so obviously false and ridiculous that it's insulting to be expected to believe it.

- The saltmarsh surveys give contradictory results and do not appear to be supported with publicly available photographs.

Finally I am not an expert on Habitats Regulations but as far as I can see there is an obligation to maintain habitat. DEFRA/NE/EA have chosen to interpret this as an obligation to create new intertidal habitat by flooding lane. Perhaps you could point out to me where the legislation requires this.

Also DEFRA/NE/EA have chosen to interpret the legislation as meaning they may not do anything (except build new ports) in areas of existing salt marsh or mudflats. This seems crazy. For example, a forest may be protected, but doesn't mean that one is forbidden from doing anything to it. In fact the reverse may be true, it will be necessary to actively manage the forest (removing dead trees for example). Why is not possible to intervene to actively manage saltmarsh. I understand from Merle Leeds of EA that this is physically possible but legally not. It seems to me that the Habitats Directive would allow active management.

yours sincerely

Jeremy Shiers

Summary of FOI requests

page	request
2	any evidence that coastal squeeze exists
2	any evidence that coastal squeeze "hypothesis" is accepted in any other country in the world
6	evidence or reasons why saltmarsh growth at a time of rising sea level is not a problem for coastal squeeze hypotheses
7	request for disclosure of evidence of the extent of saltmarsh erosion caused by crabs or ragworm or any other organism
11	any evidence that the cost of maintaining sea walls is unsustainable

Some more photographs showing

1. saltmarsh is flat
2. saltmarsh is not just eroded from sea side

DSCN0740