

Exe Estuary Crab Tile Survey 2008



Exmouth Town
Council



for birds
for people
for ever



Dawlish Town
Council



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1. Introduction

Crab tiling or potting is the collection of peeler crabs from the intertidal mudflats on the estuary for use as bait by fishermen and anglers. Like all crustaceans shore crabs moult their shell in order to grow meaning at various intervals in their life cycle they have soft shells and are vulnerable to predation.

During these periods the crabs actively seek out hard surfaces to shelter under as a refuge from predators. The bait collectors exploit this behaviour by providing artificial structures for the crabs to use.

The bait collectors each have their own sets of crab tiles on the estuary, which are generally sections of drain pipe or roof tiles that the peeler crabs will shelter under. On collection, the crabs are used as fishing bait for anglers.

Crab tiling has taken place for many years and local crab tillers often recall their grandfather's crab tiling on the same site.

Previous surveys of the amount of crab tiles present on the estuary took place in 2000/1 and 2003/4 the results of which are shown in our results section and compared to our 2008 survey results. The 2001 survey results are used as the baseline data for all future crab tile surveys of the Exe Estuary.

Crab Tilling is managed by Devon SFC Bylaw 24 which limits the area in which crab tiles can be laid in order to maintain sustainable quantities of shore crabs on the estuary, any tiles outside of this area may be removed. Starcorss Yacht club across to Exton are the upper limits of the area.

A voluntary crab tile code of conduct is also available, which was created and agreed by the bait collectors and the Exe Estuary Management Partnership in 2003. The code states that no more tiles should be laid, the 2001 survey results are used as the benchmark of how many tiles are allowed.

Unlike the previous surveys the 2008 report was not instigated due to any perceived increase in activity but is part of the long term management and understanding of the situation and provides guidance as to the success of the bylaw and voluntary code of conduct.

2. Methodology

In order to provide comparable data with the previous surveys of the estuary the same methodology was followed as much as possible. This involved using the same survey sheets to record the number of tiles, substrate, type of material used, position etc. The 2004 maps of tile distribution were used to compare and record the current position of tiles with GIS recordings taken regularly to confirm position. Please see the appendix for methodology guidelines and a copy of the crab tile survey form.

The survey was carried out on 17th, 18th, 29th and 30th October 2008 by the Exe Estuary Officer, Devon Sea Fisheries and Natural England.

3. Survey Results

All results data, such as survey forms and GIS maps, will be held by the Exe Estuary Management Partnership. To request information please contact the Exe Estuary Officer on 01392 382236 or in writing to The Exe Estuary Management Partnership, c/o Devon County Council, County Hall, Topsham Rd, Exeter, EX2 4QW.

3.1 Comparison of Total Tile Counts Over the Three Surveys

Survey	Number of Tiles	Difference
2001	26,800	Baseline
2004	30,302	+ 3502
2008	26,488	- 312

3.2 Tile Distribution

Area	Number of Tiles		
	2008	2004	2001
Exe 04	152	410	0
Exe 05	6054	4573	1135
Exe 06	4720	6375	3400
Exe 07	6313	8468	8450
Exe 08	2765	3303	4876
Exe 09	0	0	150
Exe 17	384	420	1165
Exe 18	1472	1580	900
Exe 19	4022	4218	5820
Exe 20	606	955	900
Exe 21	0	0	0
Total	26,488	30,302	26,800

3.3 Comparison of Tile Distribution Between 2001 (baseline) and 2008 Surveys

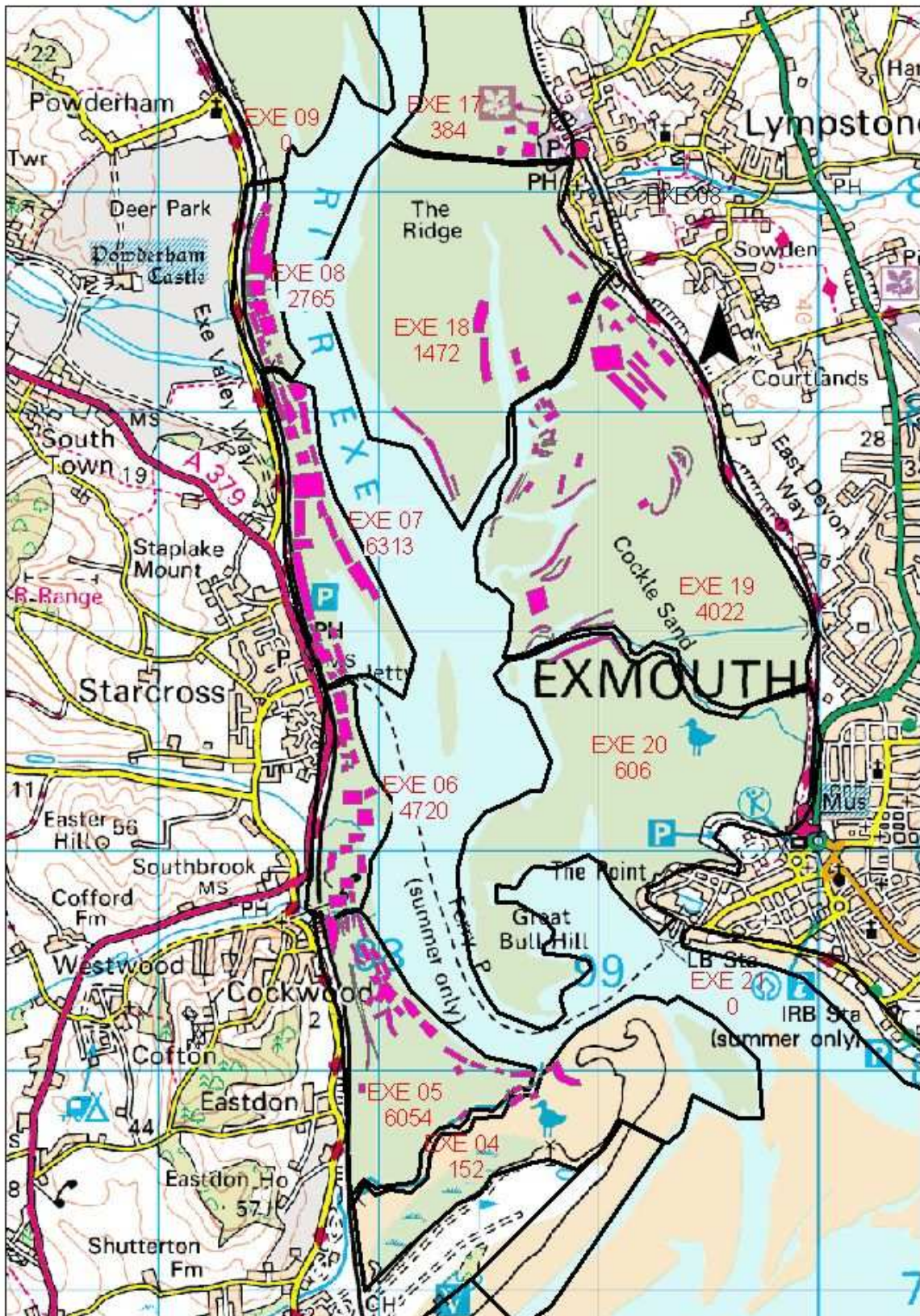
Area	Number of Tiles			
	2001	2008	Difference	Percentage
Exe 04	0	152	+ 152	+ 100%
Exe 05	1135	6054	+ 4919	+ 81%
Exe 06	3400	4720	+ 1320	+ 28%
Exe 07	8450	6313	- 2137	- 25%
Exe 08	4876	2765	- 2111	- 43%
Exe 09	150	0	- 150	- 100 %
Exe 17	1165	384	- 781	- 67%
Exe 18	900	1472	- 572	- 39%
Exe 19	5820	4022	- 1798	- 31%
Exe 20	900	606	- 294	- 33%
Total	26,800	26,488	- 312	- 1.16%

3.4 Comparison of Tile Distribution between 2004 and 2008 Surveys

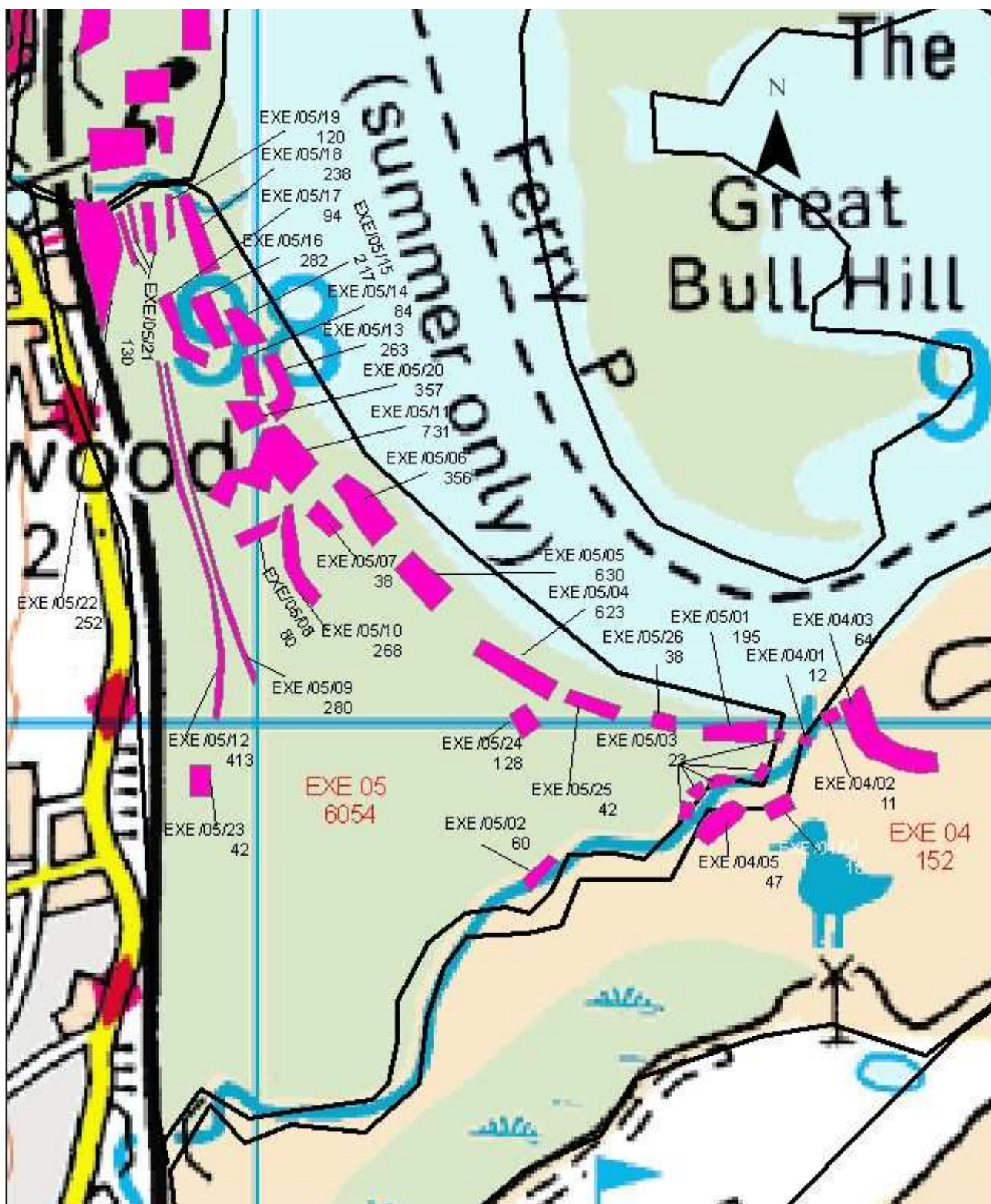
Area	Number of Tiles			
	2004	2008	Difference	Percentage
Exe 04	410	152	- 258	- 63%
Exe 05	4573	6054	+ 1481	+ 24%
Exe 06	6375	4720	- 1655	-24%
Exe 07	8468	6313	- 2151	-24%
Exe 08	3303	2765	- 538	-16%
Exe 17	420	384	-36	- 9%
Exe 18	1580	1472	- 108	- 7%
Exe 19	4218	4022	- 196	- 5%
Exe 20	955	606	-349	- 37%
Total	30,302	26,488	- 3,814	- 13%

4. Digitised Maps

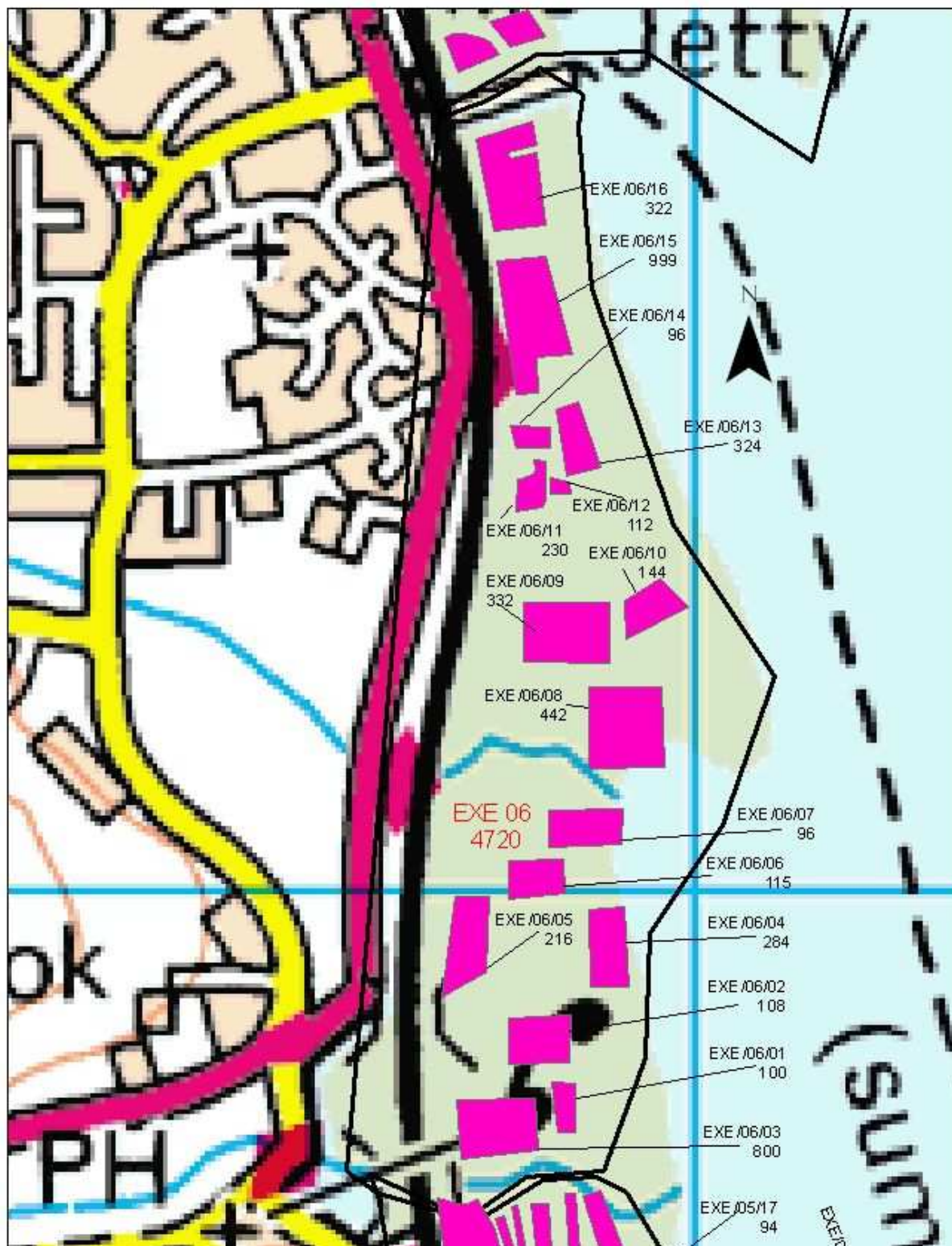
4.1 Overall Map showing Tile Distribution



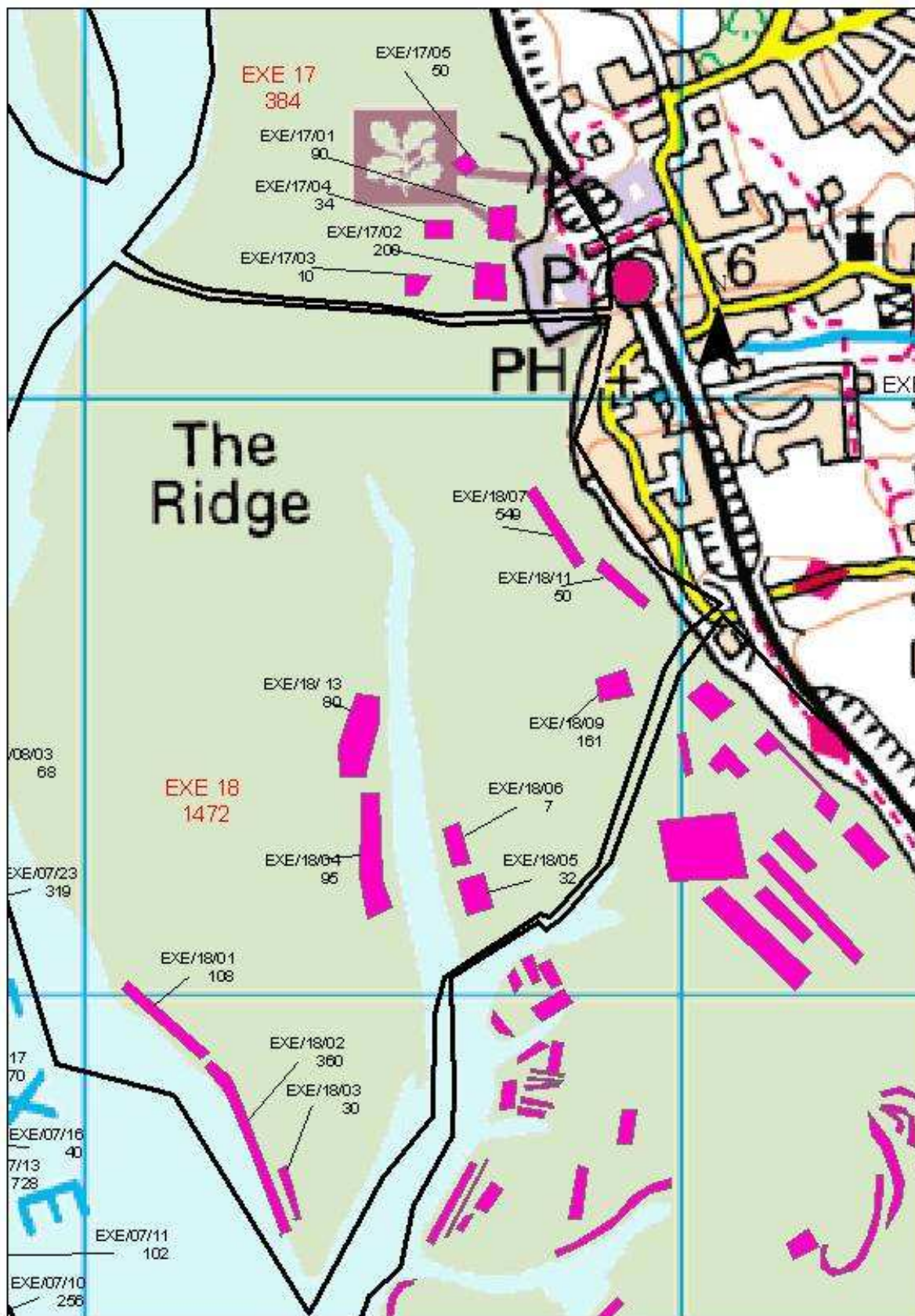
4.2 Map of Exe 04 and 05



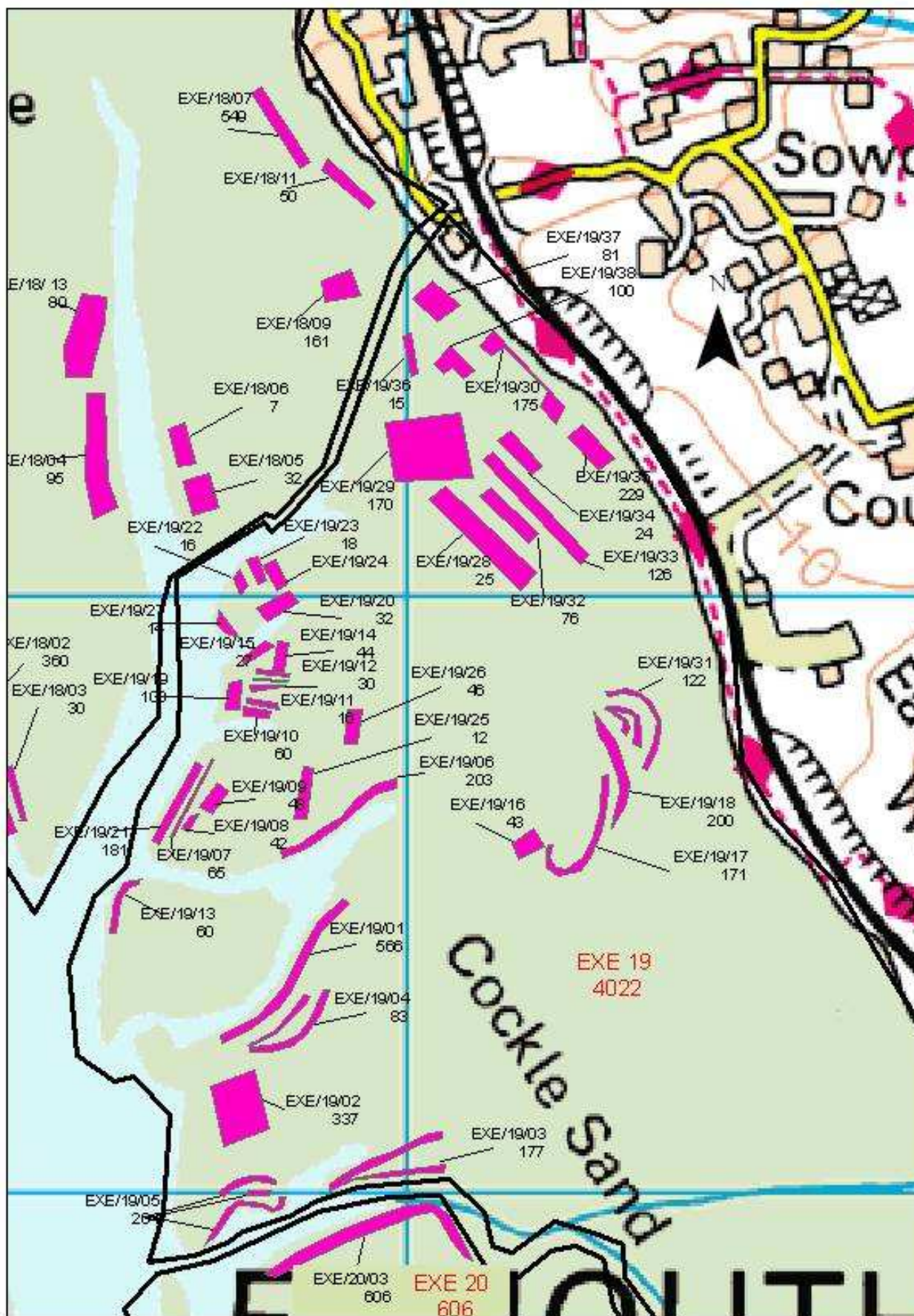
4.3 Map of Exe 06



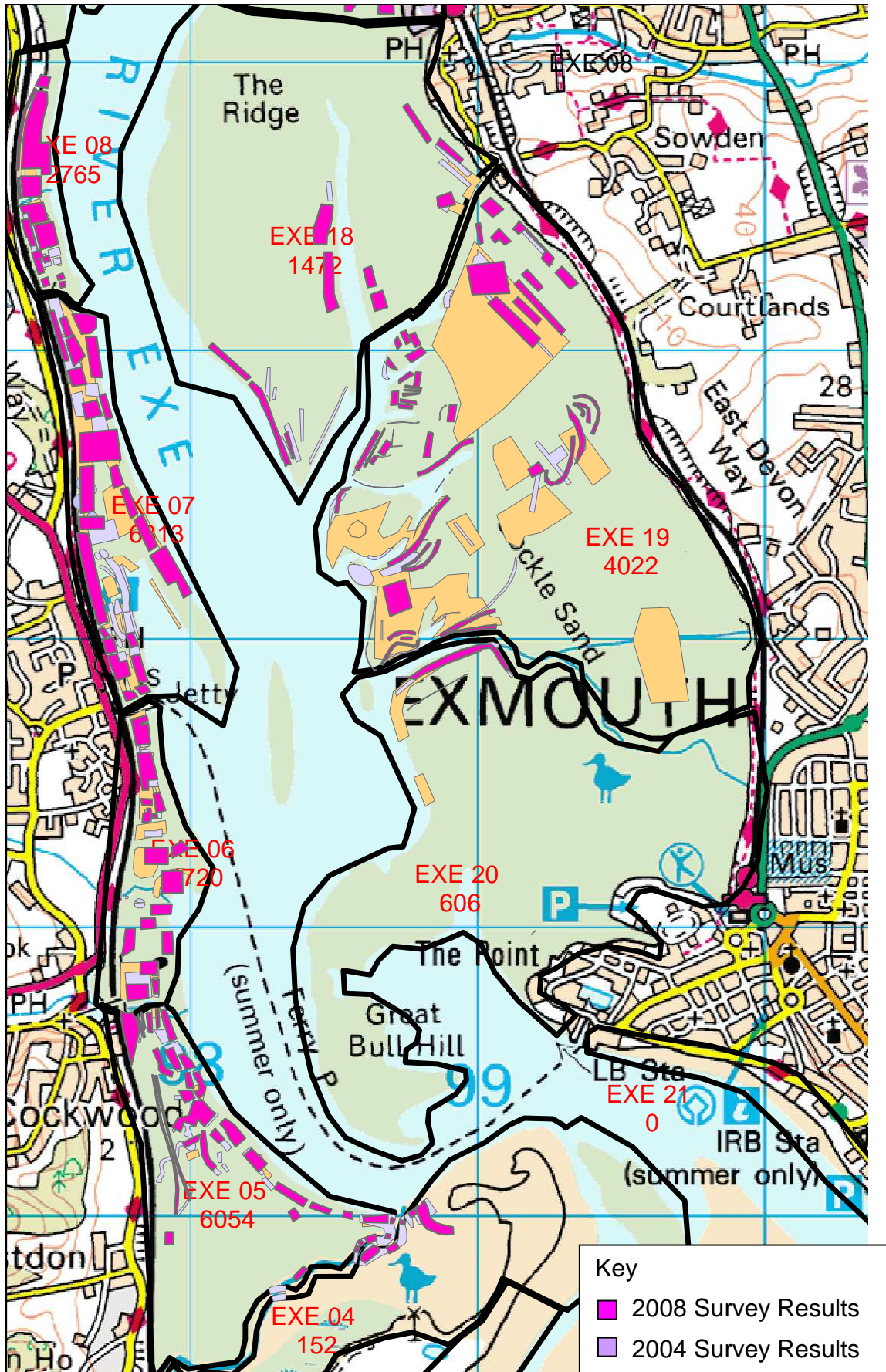
4.5 Map of Exe 17 and 18



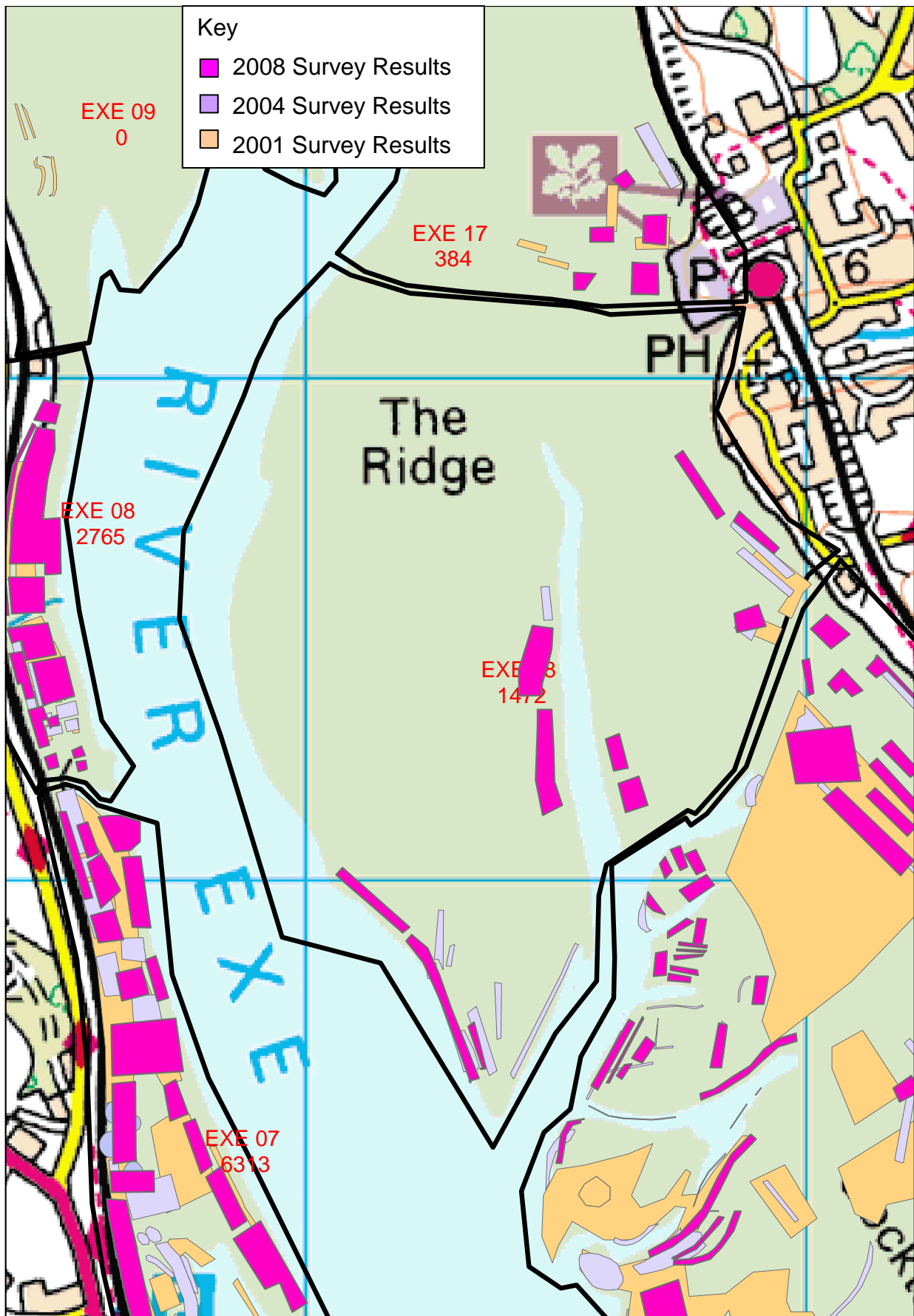
4.6 Map of Exe 19 and 20



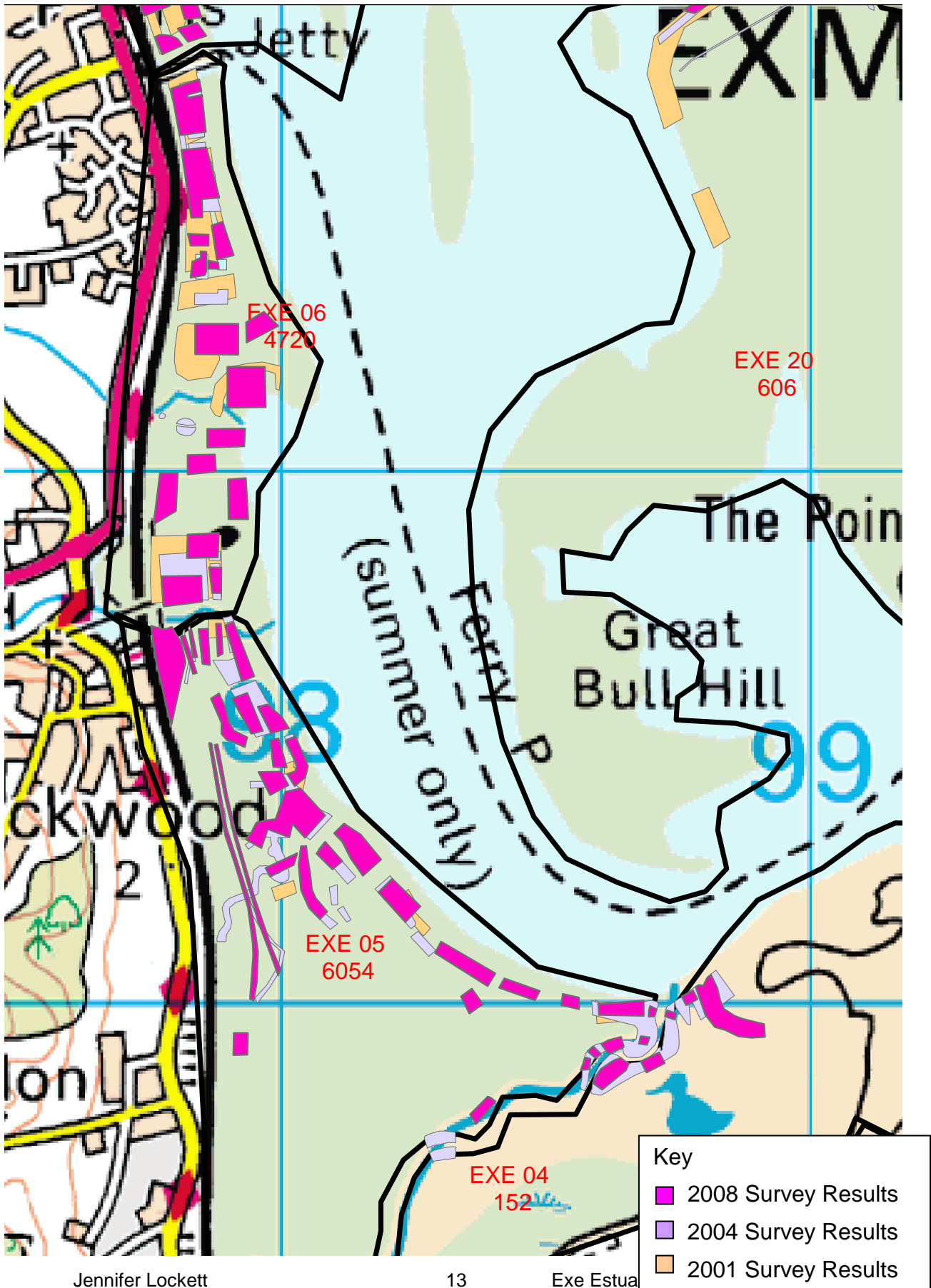
4.7 Map Comparing 2001, 2004 and 2008 Survey Results



4.8 Map of Upper Estuary Comparing 2001, 2004 and 2008 Survey Results



4.8 Map of Lower Estuary Comparing 2001, 2004 and 2008 Survey Results



Jennifer Lockett
Partnership
Exe Estuary Officer

5. Conclusion

The results show a general decline in the number of tiles across the estuary, since the last survey was undertaken, and a small decline when compared with the baseline data collected in 2001. The fluctuations are fairly small and appear stable to within a few thousand tiles.

The results are a positive sign that the voluntary code of conduct has been successful and has been abided by. This is not surprising as the number of tiles is directly related to the catch rate allowing for the activity to be fairly self regulating amongst the bait collectors who understand the consequences of additional tiles being laid and are fairly territorial of the area's where they collect from and protective of the voluntary code.

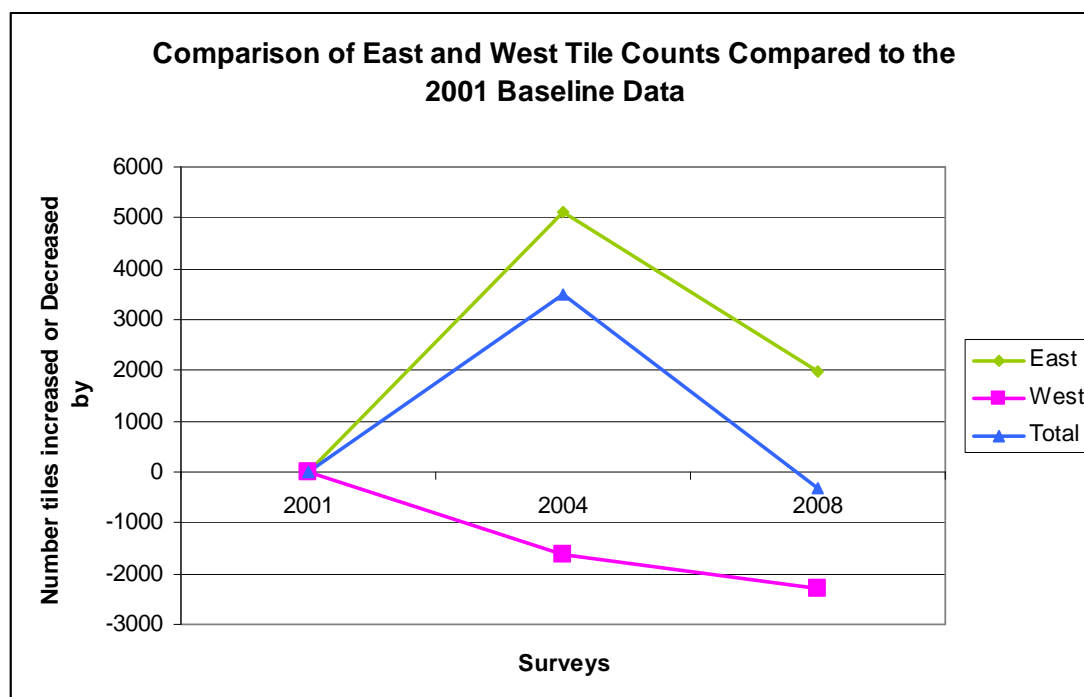
This said there must also be some allowance for a variation in survey technique and robustness due to the difficult nature of the survey. Possible variation may occur from:

- Personal objectivity as to whether a tile is still in use and is worthy of being counted
- The visibility of the tiles which are often sunken and covered in seaweed and can easily be mistaken for rocks or litter
- The difficulty accessing the tiles in the limited low tide window, particularly in the upper estuary where the substrate is mostly fine mud. Some of the tiles in section 18 had to be counted by boat as they were inaccessible by foot.

A natural variation in the distribution of tiles between the different surveys, as the bait collectors either reposition their tiles to find more successful sites or tiles change hands and are moved around, is expected.

When the 2008 survey results are compared to the 2001 baseline data (see table 3.3) the difference between the total number of tiles is very small with just a 1% decrease. However, when examined closer to compare the movement of tiles between individual areas the differences are considerable with some areas seeing an 81% increase in the number of tiles while others have decreased by similar proportions. The 100% loss of tiles from Exe 09 reflects the commencement of Devon SFC Bylaw 24 prohibiting the use of tiles in this area. Interestingly it coincides with the arrival of a very similar quantity of tiles in to Exe 04, a previously unused area. However this can not be the same tiles moved from one area to the other as the Exe 09 tiles were removed and destroyed by DSFC.

On the graph below, which compares the number of tiles which have been added or lost from the East and West side since the 2001 survey, we can see that there is a completely different trend taking place on each side of the estuary. The East side saw a substantial increase from the 2001 survey but then a similar decline in numbers for the 2008 survey. While the West side has experienced a general decline in numbers since the 2001 survey.



Interestingly there are almost three times as many tiles on the Eastern banks of the estuary than the Western, a trend that can be seen in the 2004 and 2008 surveys. This may indicate that the success rate is higher on the Eastern bank and the area is able to support a greater number of tiles. Considering that some of the key feeding areas for waders are on the Eastern shore, due to the presence of Eel grass, this trend will need to be monitored to ensure that the crab tiling is not unnecessarily impacting on this vital habitat and feeding resource.

There is only one area of the Exe where an increase in tiles has been observed since 2004 and this is between Dawlish Warren and Cockwood in Exe 05 (an increase of 1481 tiles). However the 2 areas either side have both experienced a significant decline in the number of tiles (1913 tiles), which could indicate that the bait collectors are moving their tiles into Exe 05 from adjacent areas in order to increase catch rate.

From Cockwood to Powderham there has been a decline of almost a quarter of the tiles surveyed in the 2004 report, this concurs with information provided by bait collectors met on site that a couple of previous tillers have ceased using their tiles, which have now become buried.

Although some of the differences between surveys are quite large it must be noted that the difference between the 2008 and 2004 survey is only 13% and the difference between the current level of tiles (2008 results) and the 2001 baseline data is less than 1%. The survey results should not be seen as an opportunity for any bait collector to lay more tiles. With the publication of this report awareness raising will be undertaken as to the complex nature of the estuary and the interdependence between the number of tiles and the success rate of catch in order to dissuade users from adding additional tiles.

6. Limitations of this Survey and Recommendations for Future Work

The survey results are not a true indicator of the amount of crab tiles that are actively used on the estuary but of those that are visible and can be counted. Many of the

tiles counted were covered in vegetation and did not look to have been visited recently but were included. This is due to the disparity in the use of tiles by different bait collectors; some tiles may be checked at every low tide while others may be left unchecked for weeks. Future surveys could look to involve crab tillers by using questionnaires to gather information on the level of usage of each area. This would also help to form links with the bait collectors engaging them further with the partnership and the management of the estuary.

The results don't give any indication as to success rate or to the impact of tiles on Shore Crab numbers. Previous surveys have quoted a 1 in 4 success rate but anecdotal reports from crab tillers during the 2008 survey suggest that this is much lower. Research has been carried out at the University of Plymouth to examine the impact of crab tiles on the number and density of shore crabs on the estuary. Their involvement in future surveys could incorporate a review of the studies' findings.

Although the digitised maps illustrate the position of sets of tiles and the number within each group, there is little indication as to the density of each section. We would recommend that future crab tile surveys of the estuary record the densities of blocks of crab tiles in order to give some representation of the impact on specific areas, this could be shown thematically on the maps. Although some density information, such as distance between tiles, was recorded on this survey we do not have a complete record and would recommend careful consideration during future methodology planning in order to quickly and consistently assign a numerical value to the density which could be used to compare different sites.

Future surveys should also take note of possible impacts to the environment such as proximity to Eel grass beds, whether access to the tiles is through eel grass beds etc. This information could be linked to the data gathered regarding usage to give some idea of frequency of disturbance if an issue is identified.

7. Appendix

7.1 Crab Tile Surveys: Aims and General Methodology

CRAB TILE SURVEY

Aim

To undertake a co-ordinated survey of Devon's estuaries using a standardised methodology to determine number and distribution of crab tiles.

Method

<p>Recruit volunteers From DWT volunteer network, South West Federation of Sea Anglers, Estuary Officer contacts.</p>	<p>DWT contribution – Volunteer recruitment from DWT membership as required.</p>
<p>Crab tile survey methodology training day For management forum attendees - Estuary Officers, Colin Davies of South West Federation of Sea Anglers, Tim Robbins of Devon Sea Fisheries Committee, Kathy McGough of Devon Wildlife Trust, and other interested parties which the Estuary Officers may wish to invite. Training to be carried out by Stephen Ley. Theory element of training at Shirehampton House, and practical session on the Exe estuary. As a first step it might be useful for those involved in estuary management and thus interested in crab tiling activity to fully understand the survey methodology. The theory and practical training will also provide an opportunity to further review the methodology and make any necessary adjustments prior to survey.</p>	<p>DWT contribution – provide premises and organise training day. Pay for Stephen Leys transport expenses and time on the training day. DBRC/DWT will provide a volunteer survey pack which will include; Task brief, Series of overlapping OS maps for each estuary, Instructions for using OS maps, Survey form, Guidance notes to aid survey, Health and safety guidelines. (One pack provided per estuary, if further packs are required, it will be the estuary officers responsibility to supply them. We recommend one pack between two surveyors. The contents of the pack are easily photocopied).</p>
<p>Volunteer training As Estuary Officers have all relevant local knowledge about their estuaries, it is suggested that they train and co-ordinate the volunteers on site. Issues for consideration by estuary officers Access to foreshore Number of volunteers required Check tide times for their estuaries and amount of time either side of low tide during which</p>	<p>DWT contribution – act as volunteer co-ordinator assigning DWT volunteers to Estuary Officers as required. Health and Safety, and insurance DWT will provide insurance cover for all volunteers involved in this project, including volunteers recruited from sources other than DWT membership, provided they are fully briefed about H&S during survey training and are provided with a copy of H&S guidelines.</p>

they can undertake surveys safely.	
<p>Data collation We recommend that the estuary officers collect the survey forms to check the information and where appropriate add further information. The estuary officers are likely to have information on mooring sites, shellfish beds, recreational zones etc. This information can be incorporated into the crab tile distribution maps. When an estuary has been surveyed and the forms checked by the estuary officer, forms to be sent to DBRC for input onto GIS.</p>	<p>Devon Biodiversity Records Centre (DBRC) has agreed to collate data, and provide detailed data to estuary officers for them to analyse and interpret as they wish. DBRC estimate 4 to 6 weeks will be required to collate the data.</p>
<p>Summary survey report</p>	<p>DWT contribution – production of a summary report on density and distribution of crab tiles.</p>
<p>Volunteer feedback</p>	<p>DWT contribution- provide feedback to volunteers on the outcomes of the survey.</p>

Timetable

The original timetable was fairly ambitious, the following dates are hopefully more realistic
 Survey Training – June
 Crab Tile Surveys – July and August
 Data Collation – will need 4 to 6 weeks
 Presentation of Results – It is unlikely that the results will be fully available for Crab Tile Management Forum planned for 19th September. Is this date flexible?

Desired outcomes of this project

- All estuary officers in Devon, and other interested parties familiar with the survey methodology
- The aforementioned estuaries surveyed and crab tile activity determined

Where do we go from here?

The surveys about to be undertaken, together with the recent surveys completed on the Dart, Exe and Tamar will provide a snapshot of current crab tiling activity in Devon’s estuaries. What we do with this information, and how we take things forward from here can be discussed at the next meeting in the Autumn.

7.2 Crab Tile Survey Form

FOR OFFICE USE ONLY
 Site No:
 Checked by EO
 Checked by DBRC
 Tide Times:
 MLW am pm
 MHW am pm

CRAB TILE SURVEY FORM

ESTUARY:
 TEMP. SITE No:
 GRID REF OF SITE:
 * Please mark location of site on copy of OS map
 (See guidance notes)

DATE OF SURVEY:
START TIME AT THIS SITE:
FINISH TIME AT THIS SITE:
AMOUNT OF TIME AT THIS SITE:

SURVEYOR NAME/S:

CONTACT PHONE No:

SITE DESCRIPTION:
 (See guidance notes)

NAME & ADDRESS OF CRAB TILER (If known):

NUMBER OF TILES:

SPACING OF TILES: (1-5 scale):
 (See guidance notes)

SEDIMENT TYPE:
 FINE
 MEDIUM
 COARSE
 OTHER
 (Please specify)

SHORE POSITION: (See guidance notes)
 HIGH
 MEDIUM
 LOW

TILES IN USE?
 YES
 NO
 UNSURE
 (See guidance notes)

MATERIAL OF TILE:
 PLASTIC PIPING
 TERRACOTTA ROOF
 TILE
 TYRE
 CORRUGATED IRON
 CHIMNEY POT
 OTHER
 (Please specify)

EPIFLORA & FAUNA ON TILES:
 (See guidance notes)

SEAWEED <input type="checkbox"/>	COVERAGE <input type="checkbox"/>
BARNACLES <input type="checkbox"/>	1=slight 2=medium 3=dense
NONE (Tiles clean) <input type="checkbox"/>	<input type="checkbox"/>
OTHER <input type="checkbox"/>	<input type="checkbox"/>
(Please specify)	<input type="checkbox"/>

ORIENTATION OF TILES: (See guidance)
 FLAT OTHER
 45° (please specify)
 UPRIGHT

EASE OF PUBLIC ACCESS: (See guidance notes)

POTENTIAL CONFLICTS: Please list here
(See guidance notes)

SKETCH MAP OF SITE:
(Please include distribution and pattern of tiles)
(See guidance notes)

PLEASE RETURN FORM TO ESTUARY OFFICER BY date

THANK YOU