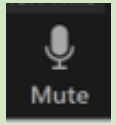
The Moors at Arne

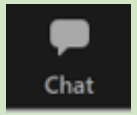
Stakeholder Liaison Group Meeting: 4th November 2020

Welcome!

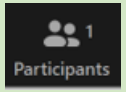
Zoom Housekeeping.



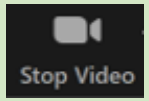
- Please mute your microphone to avoid background noise



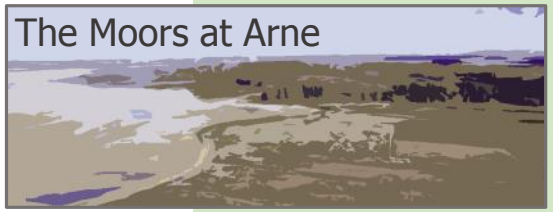
- During the presentation if you would like to ask a question please write it in the chat box

- At the end of the meeting if you would like to ask a question in the open forum, please raise your hand and we will unmute you individually so you can speak. (In 

3 dots at the bottom of the panel and raise hand.)
- There are 3 view options: full screen, speaker or gallery view you can opt to choose during the meeting. (This may be altered as the presentation is being shared but can manually be altered by each participant)

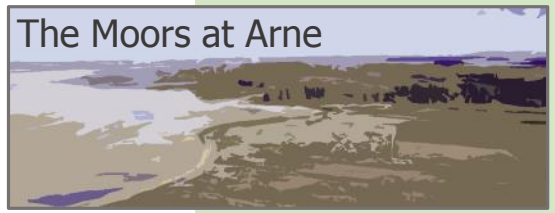


- It can be helpful to turn off you video as the presentation is shown to minimise any interruption with the internet



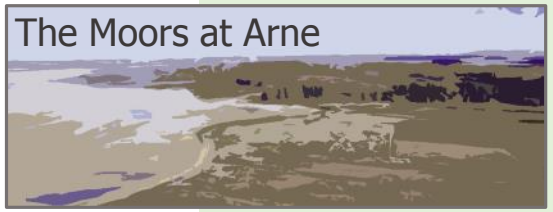
Stakeholder Liaison Group Agenda

1	Introductions	5 mins
2	Review of notes from last meeting	5 mins
3	Brief project update	5 mins
4	Navigation and Siltation Update	20 mins
5	Traffic Survey Update	20 mins
5	Open Forum	25 mins
6	Next steps and date of next meeting	5 mins



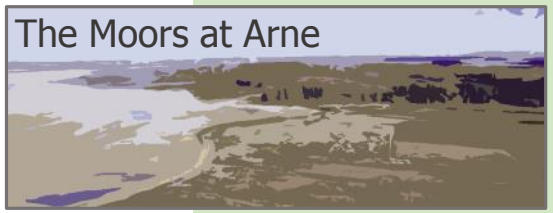
Progress Update

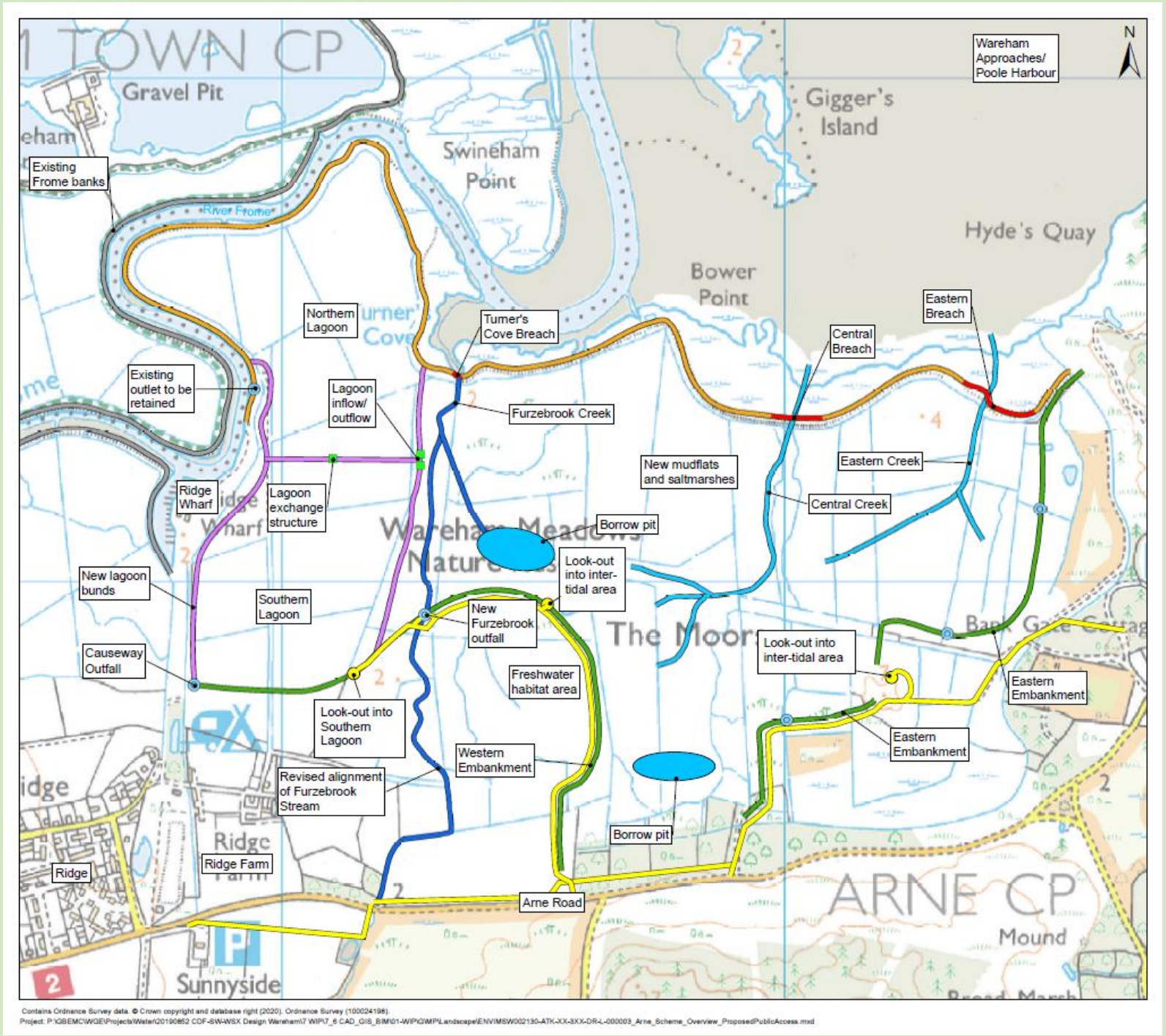
- Ecological surveys
- Ground Investigation
- Archaeological trenching
- Bathymetry
- Detailed Design
- Public access
- Planning & Consents



Project Update

Proposed Public Access Route





The Moors at Arne

Navigation and Siltation Update

The Moors at Arne Coastal Change Geomorphology

1. Introductions
2. What you have told us previously
3. Evidence base and approach
4. Navigation and siltation

Dr Paul Canning
Associate Director
Atkins Ltd

What you have told us previously

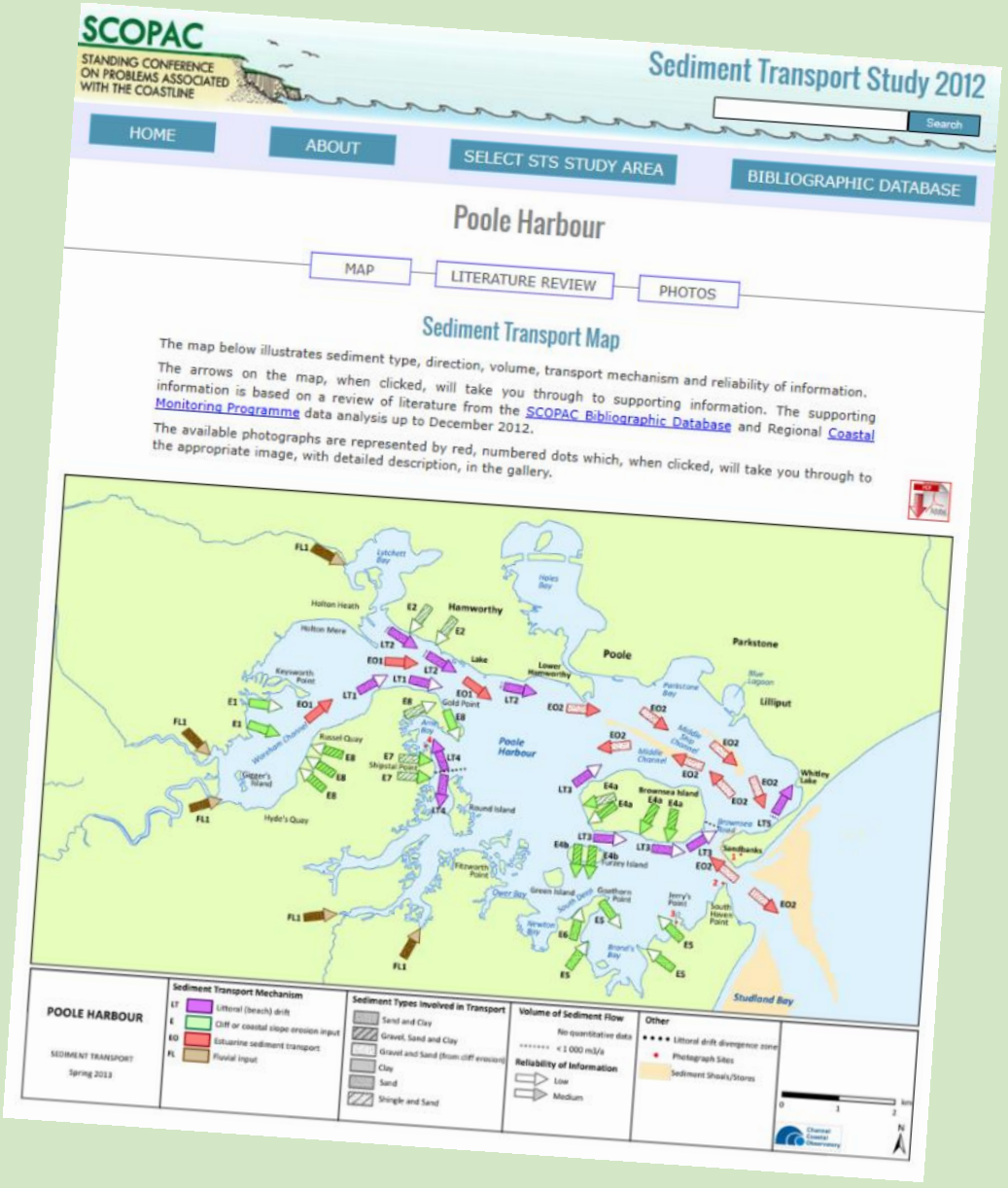
- Concerns of why a breach is required at Turners Cove outfall
- Concerns on the proposed scheme causing changes to water levels and currents within the River Frome throughout the tide
- Concerns on navigation on the River Frome, notably around Turners Cove outfall, due to sedimentation. Proposed mitigation if scheme impacts do occur.

Evidence base and approach

- UK industry guidance identifies using a number of evidence sources.
- Scientific literature including industry accepted harbour sediment transport understanding, PhD theses, journal papers, and reports from the 1960s onwards
- Historic mapping, bathymetry and aerial photography from 1880s, 1900s, 1930s, 1940s, 1970s, 1990s
- Recent and ongoing mapping, notably bathymetry and LiDAR since 2000s
- UK best practice analytical and numerical methods
- Above datasets assessed to develop a conceptual and quantified understanding of sediment transport

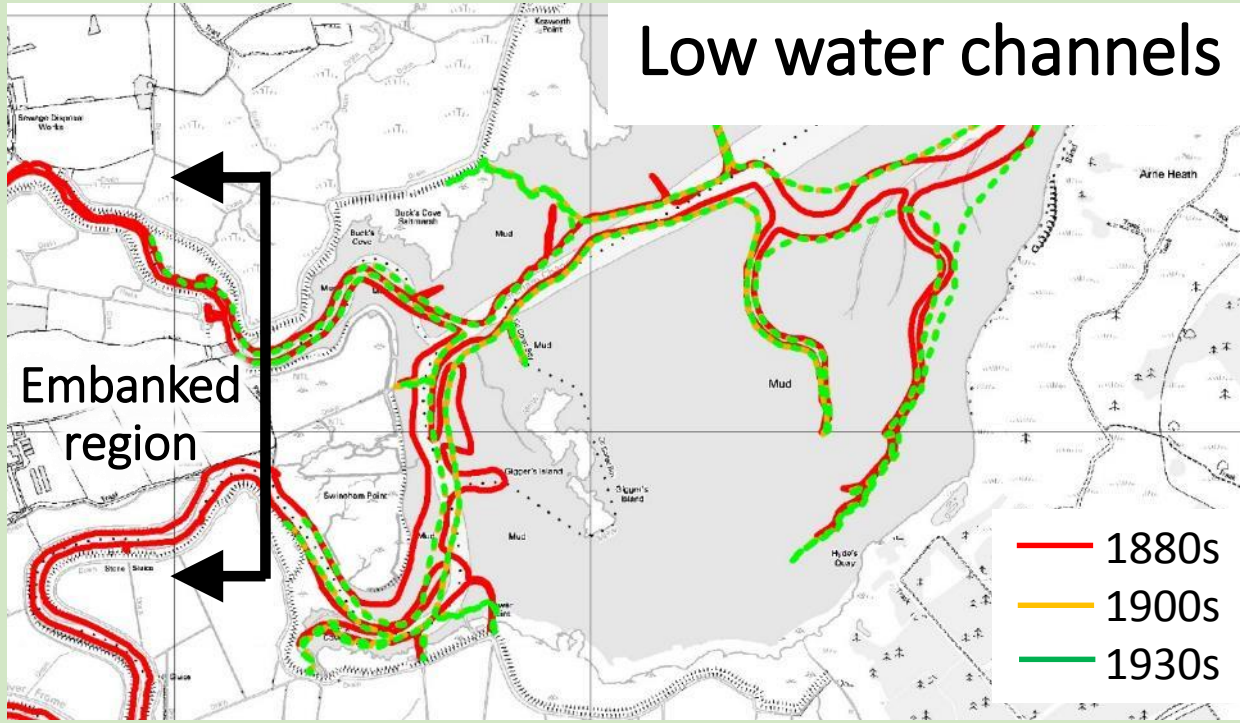
Key scientific literature

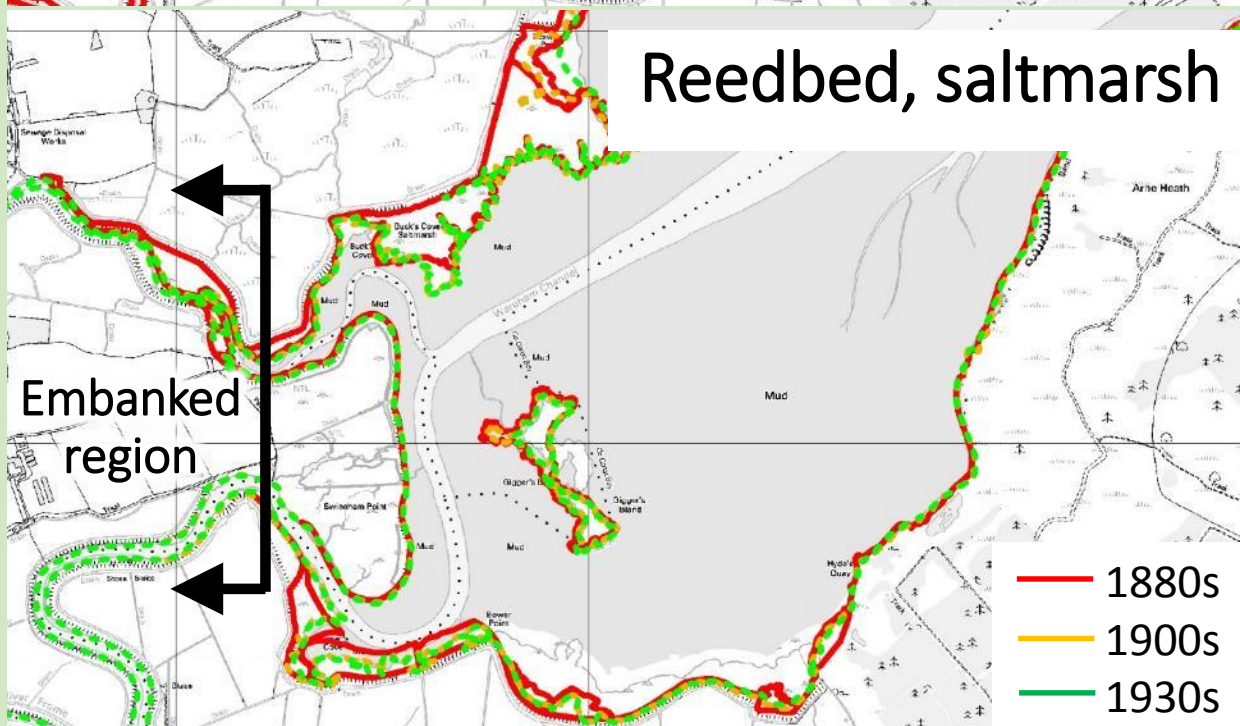
- Sediment Transport Study setting out accepted understanding of Poole Harbour processes, drawing from 100s of scientific reports and papers. (SCOPAC update, 2017)
- Wareham Channel intertidal accretion/erosion PhD theses (Gardiner, 2015; Crossley, 2018)
- River Frome suspended and bed sediment studies (Collins et al, 2005, 2007)
- Many other journal papers and reports



Historic mapping summary

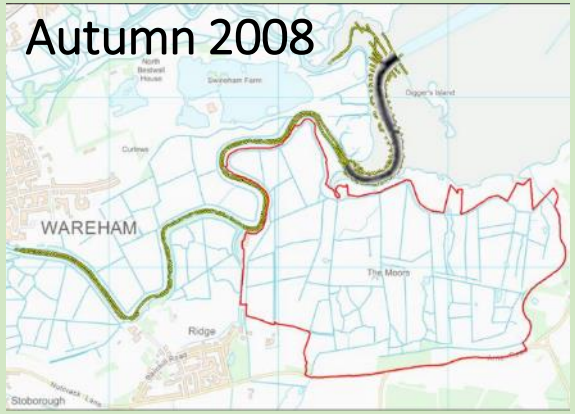
- Rivers Frome and Piddle have remained broadly static between 1880s and the present day due to embankments.
- Meander SW of Giggers Island has migrated south-easterly 1m/yr for over a century.
- Giggers Island & adjacent channel shifted historically but static since 1970s.
- Variable reedbed/saltmarsh accretion and erosion historically along Arne Moors.

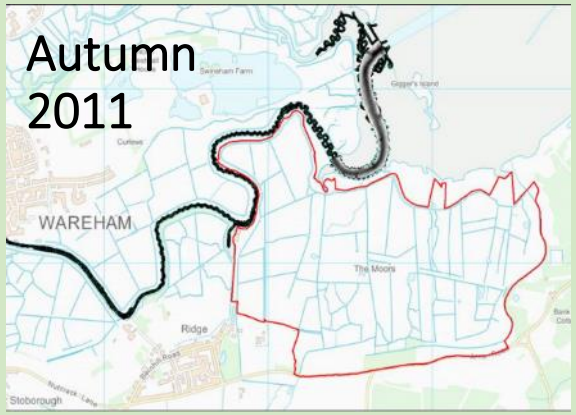


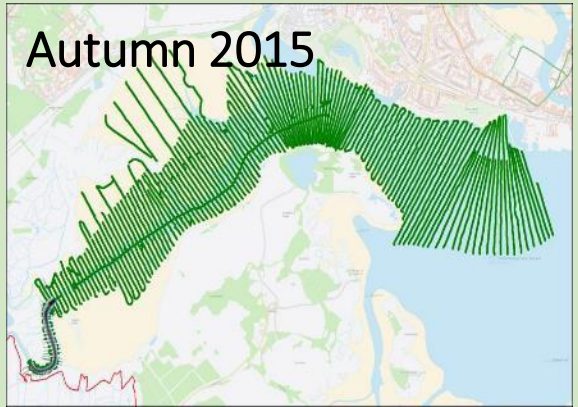


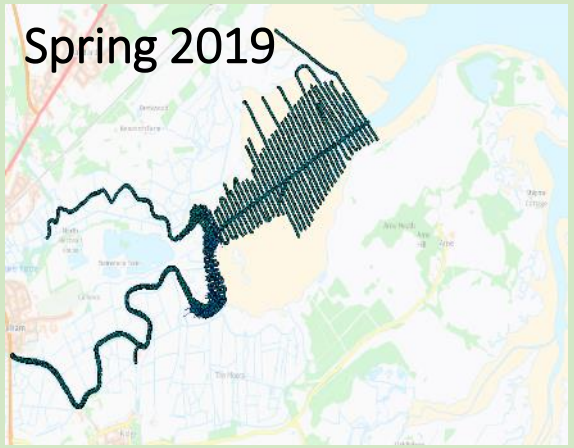
Recent and ongoing LiDAR & bathymetry summary

- 2008-2015 bathymetry surveys useful but variable coverage and detail.
- Spring 2019 to spring 2020 bathymetry surveys consistent in coverage and detail, developing a good baseline dataset.
- 2013 and 2020 LiDAR with consistent 1m resolution



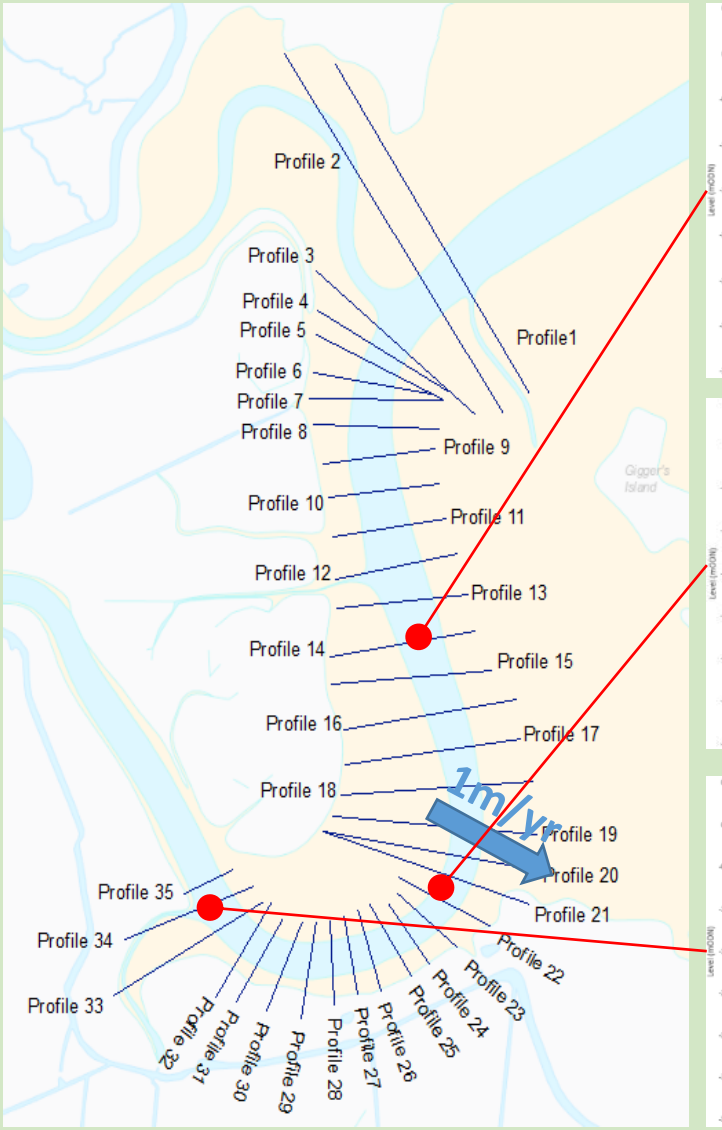


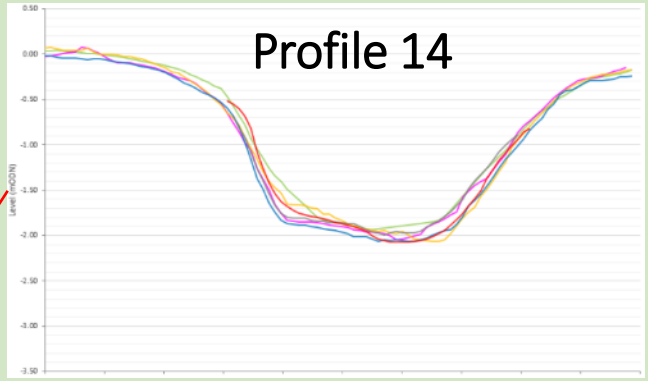


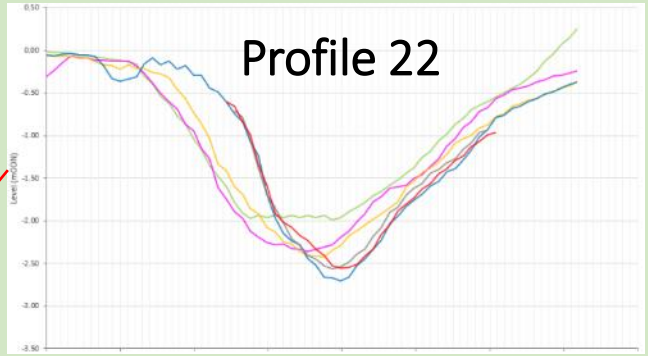


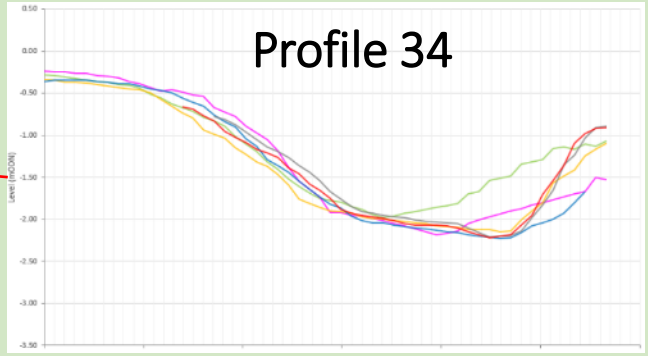
Recent and ongoing LiDAR & bathymetry summary

- Meander SW of Giggers Island has migrated south-easterly 1m/yr (agreeing with historic trend) and lowered by up to 0.2m between 2008-2020.
- Mudflat change within LiDAR accuracy, possible minor trend of accretion supported by independent PhD theses & historic trend.
- River Frome channel changes are highly localised with no consistent trend.



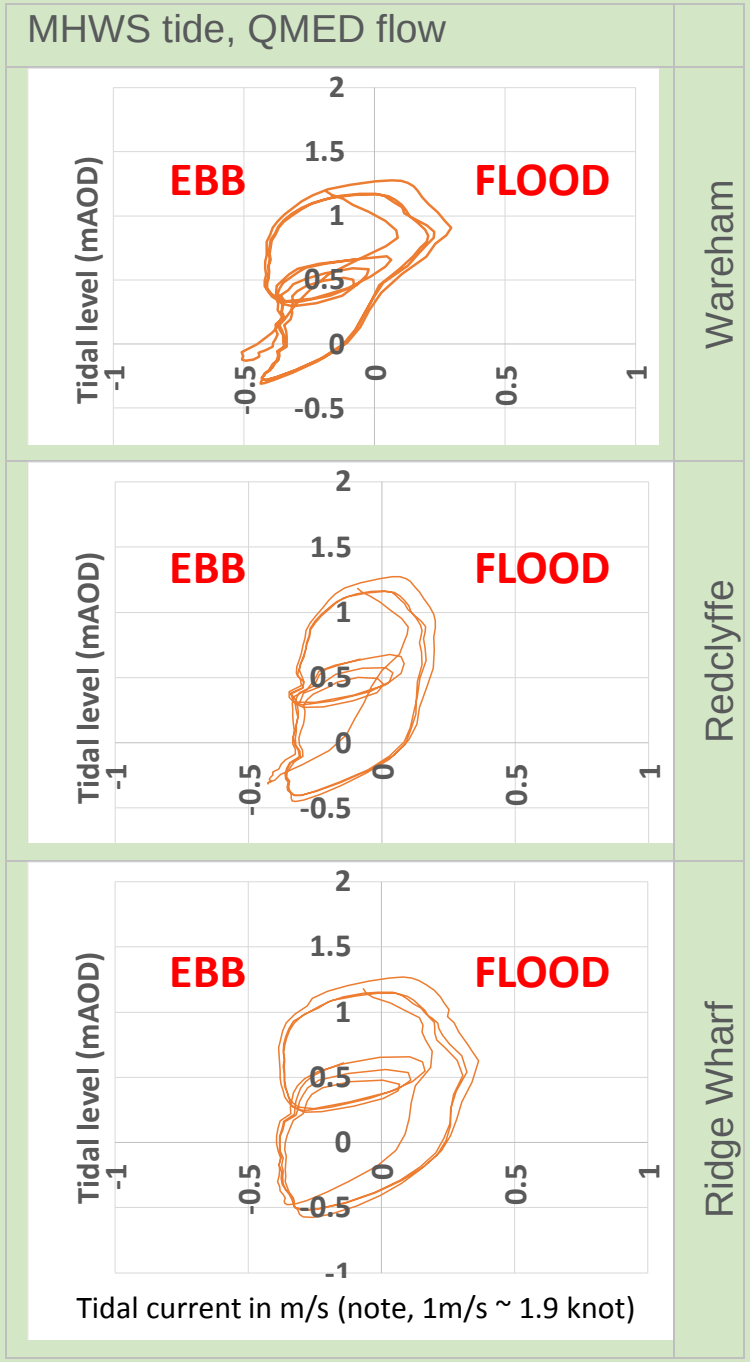




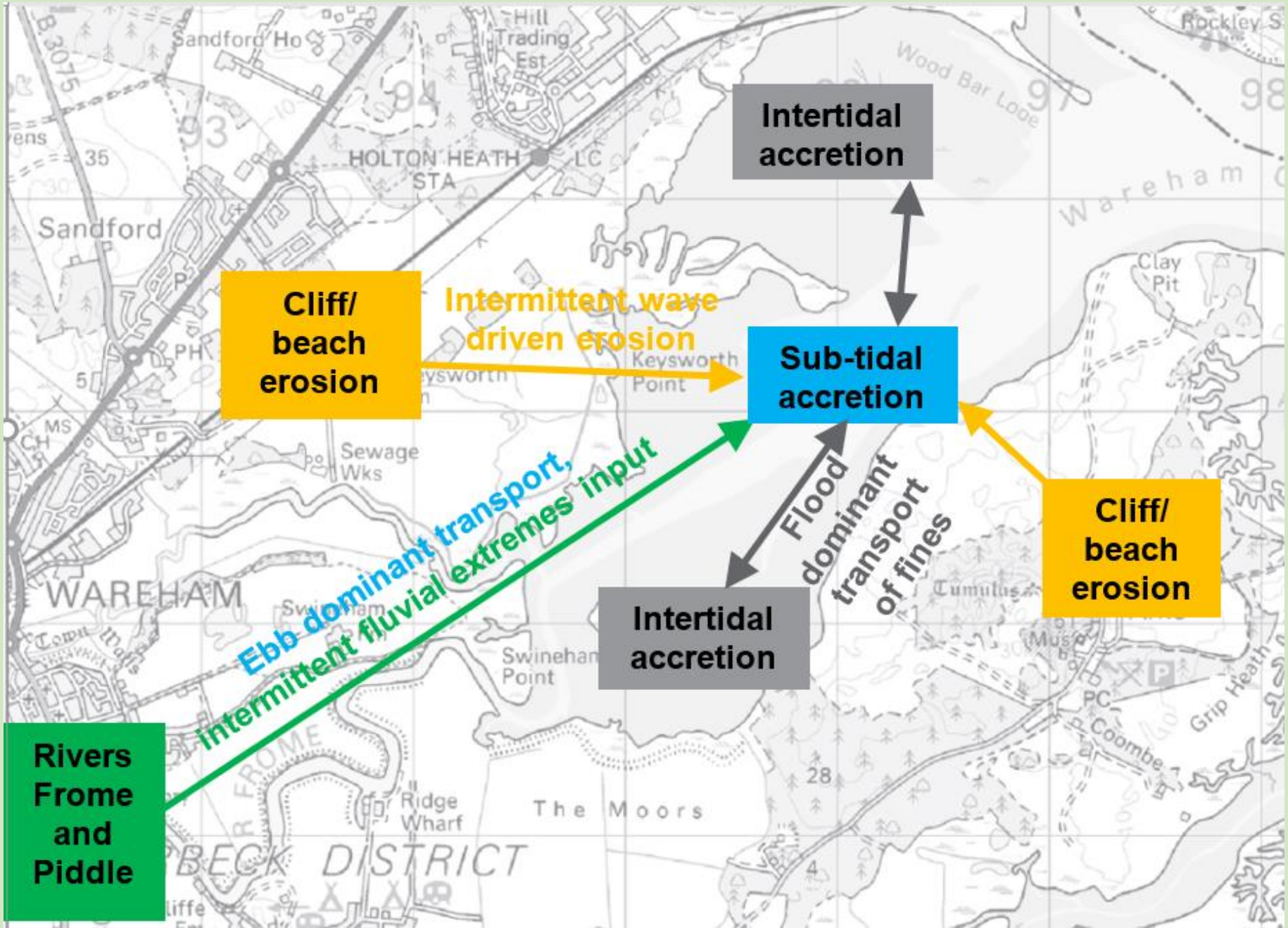


Analytical & numerical modelling of River Frome

- Water currents are tidally ebb dominated, except during extreme fluvial events (such as July 2012).
- Peak water levels are tidally dominated up to at least Redclyffe Yacht Club even with extreme fluvial events.
- Low flow velocities suggest that the River Frome up to Wareham would tend to accrete, with ‘stored’ fluvial sediment being injected into the harbour during extreme fluvial events, the ‘**jerky conveyor**’.



Conceptual model of Wareham Channel sediment transport



Why a proposed breach at Turners Cove outfall?

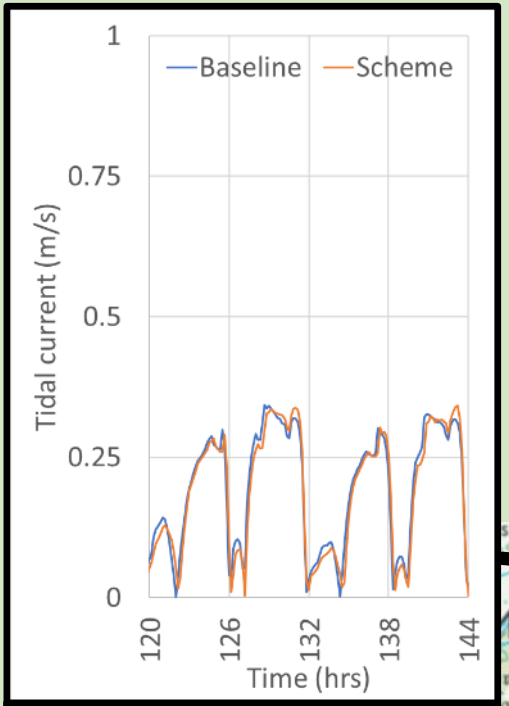
- Enable efficient discharge of Furzebrook.
- Enable saline filling in the west (lagoons) of the proposed scheme.
- Turners Cove outfall has experienced repeated subsidence, damage and repair.
- Turners Cove outfall is predicted by engineering analysis to be a weak point likely to breach on the Moors frontage.

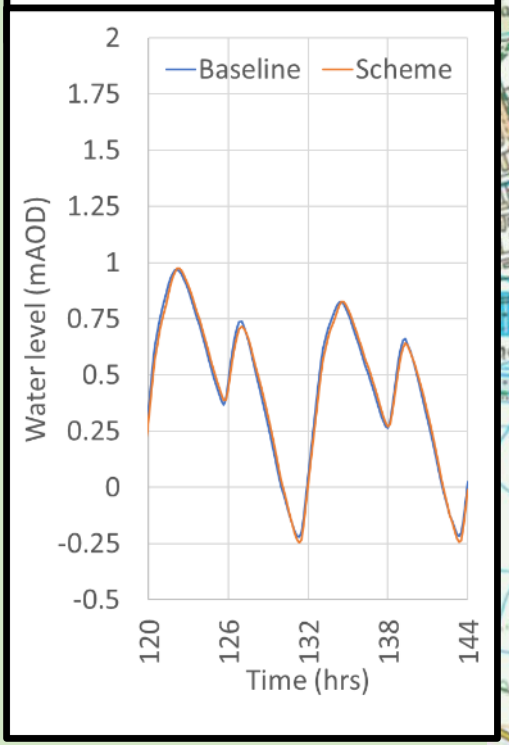
Water levels and currents on the River Frome
No measurable scheme impact

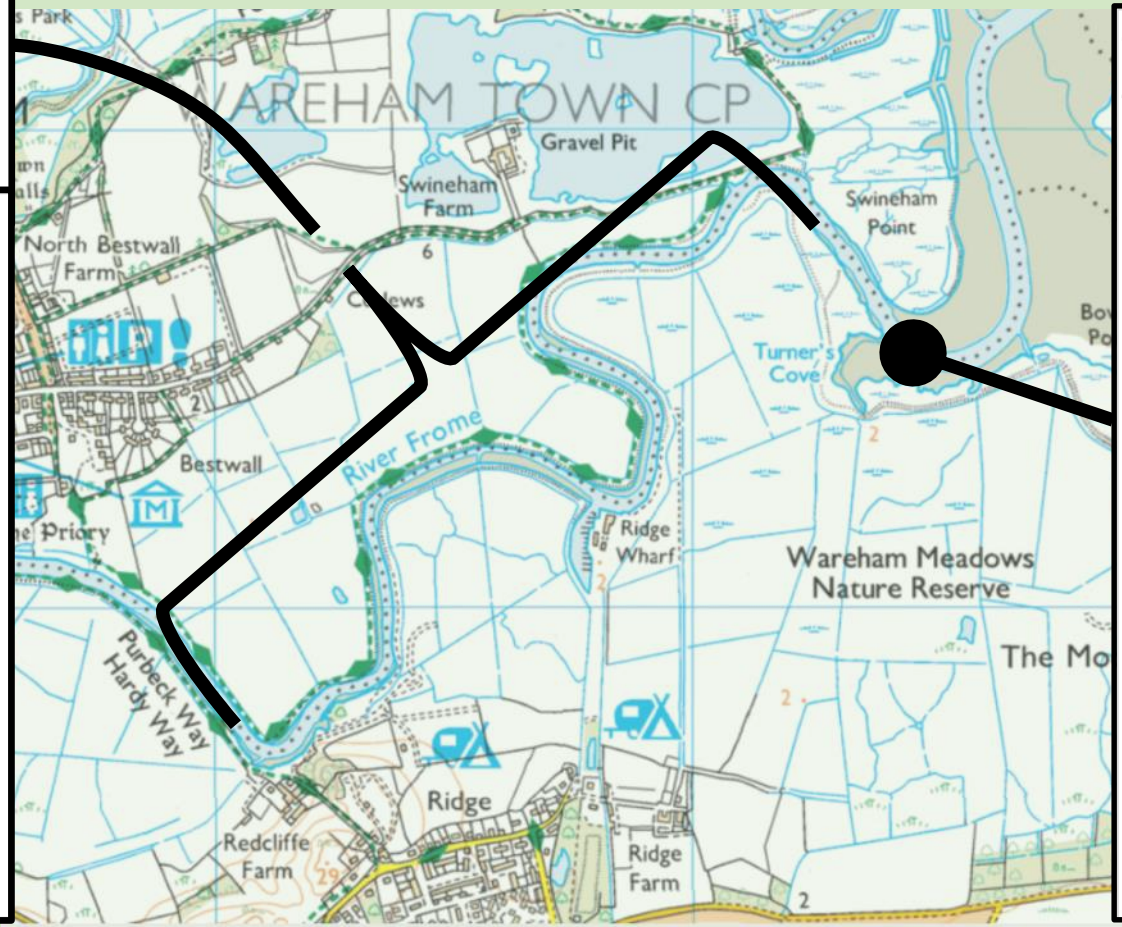
Predicted localised change at Turners Cove

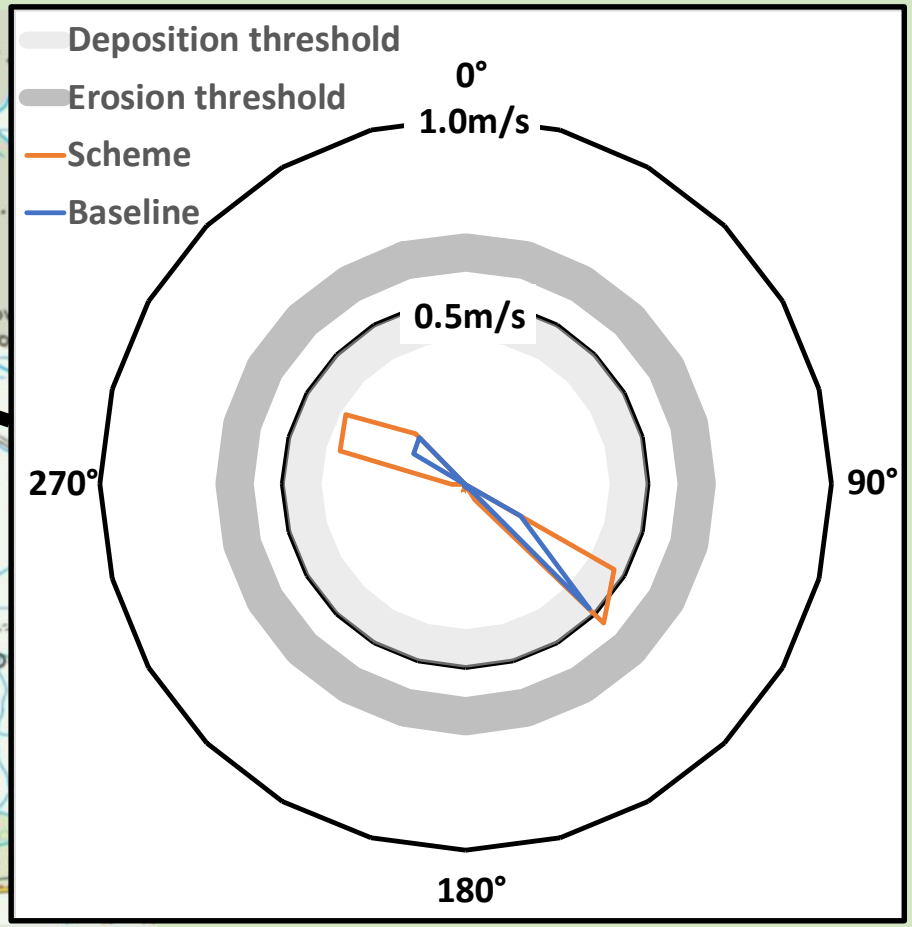
1hr duration change of <0.2m/s increase around low & high water

Same scale of change as for annual natural tide variation









Siltation

- EA and Redclyffe Yacht Club boat visit on 05/10/18 clarified the local navigation challenges and concerns.

- Modelling of fluvial and tidal water levels and currents indicates no scheme impact. Therefore no physical driver to change siltation patterns in the River Frome.

- Sediment transport understanding indicates that predicted accretion within the scheme intertidal area will come from the suspended sediment load within Poole Harbour, sourced from ongoing shoreline and intertidal erosion.

- Predicted accretion within the scheme intertidal area would be a negligible proportion (<1%) of the Poole Harbour suspended sediment load.

Conclusions

- Natural processes
  - Mudflat seaward of Arne Moors is stable or marginally accreting.
  - River Frome near Turners Cove is shifting SE at ~1m/yr, likely to continue.
  - River From downstream of Wareham is tidally ebb dominated with a tendency to accrete, with extreme fluvial events injecting sediment into the harbour.
  - No clear consistent trends elsewhere on River Frome.

- Scheme processes
  - Scheme (realignment site) would accrete, with sediment coming from Poole Harbour generally (mainly from shoreline and intertidal erosion).
  - Accretion would represent <1% of Poole Harbour total suspended sediment load.
  - **Scheme would not have any measurable impact on water levels, currents, or sedimentation.**

- Ongoing monitoring
  - Spring and autumn bathymetry surveys to continue.

The Moors at Arne

Traffic Survey Update

Traffic Monitoring

To investigate concerns raised by Ridge residents (during public consultation) about safety due to RSPB visitor traffic

a) Perception of increasing visitor traffic to current RSPB Reserve

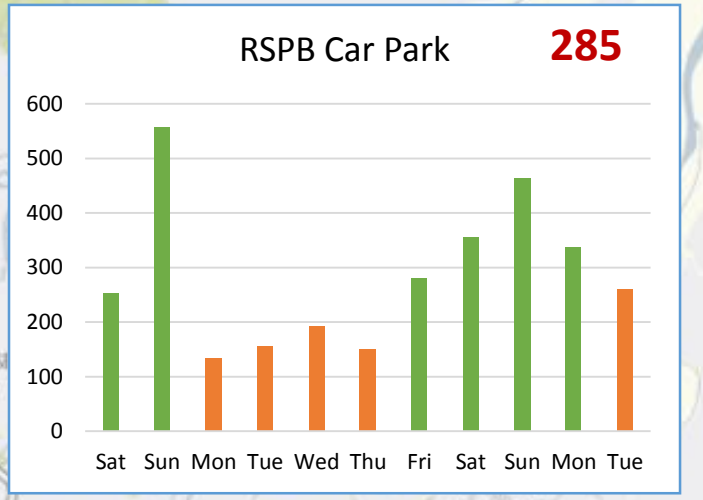
b) Fear of further increases as a result of the Arne Moors Project

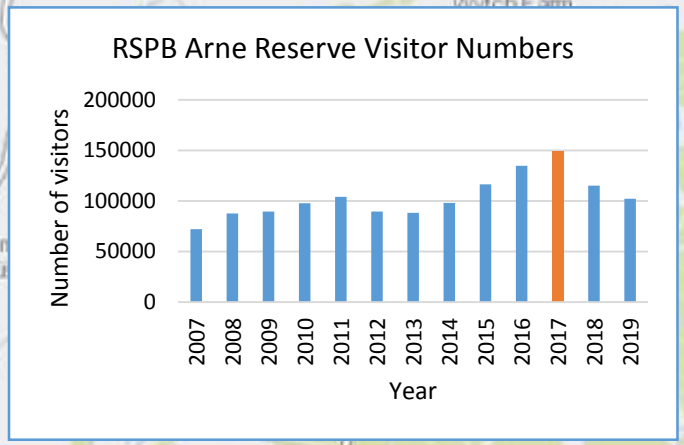
Mean daily traffic flow (whole survey period) Easter 2017

700

EB 674

WB 718



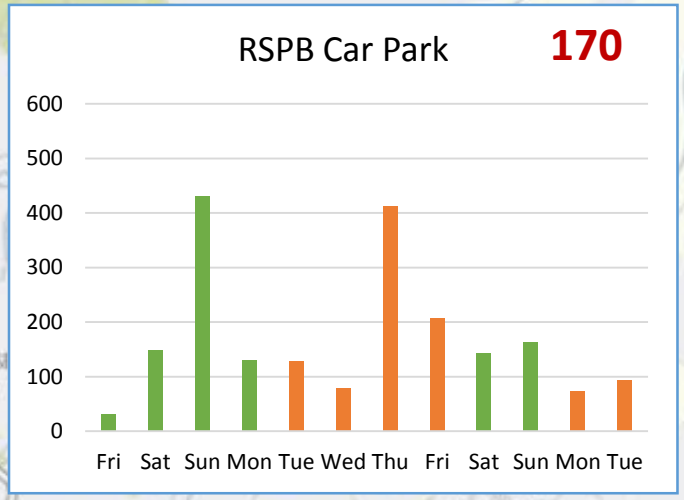


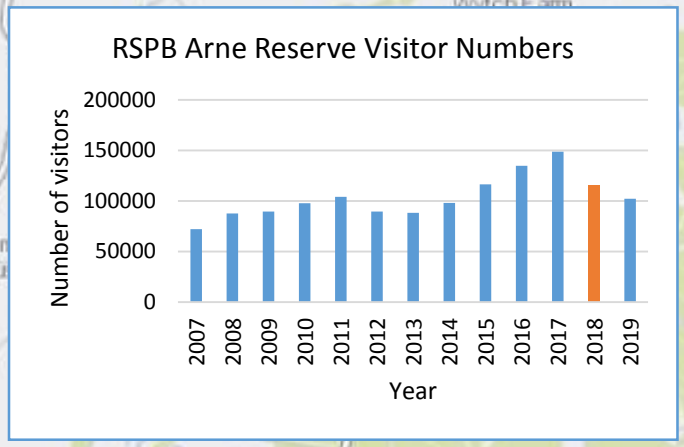
Mean daily traffic flow (whole survey period) Easter 2018

470

EB 463

WB 466





Mean daily traffic flow (whole survey period) Oct 2019

NB 195
SB 181
200

EB 542
WB 535
550

300

100+

800

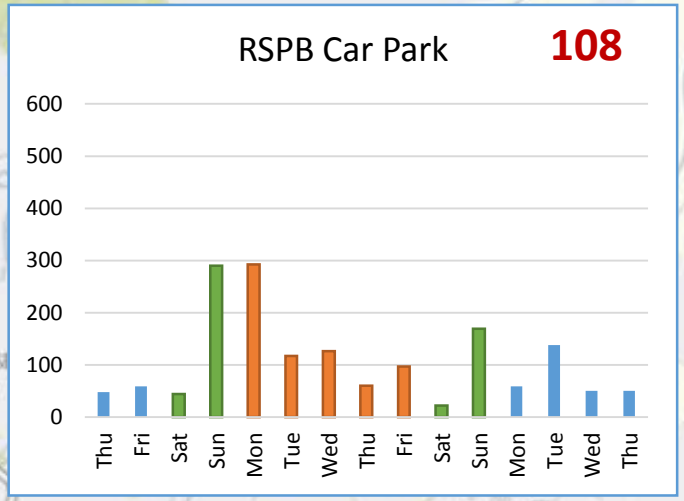
500
EB 501
WB 514

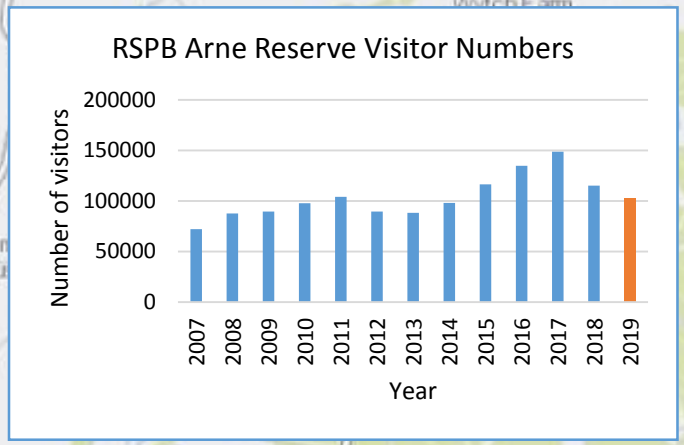
250
NB 243
SB 228

NB 108
SB 61

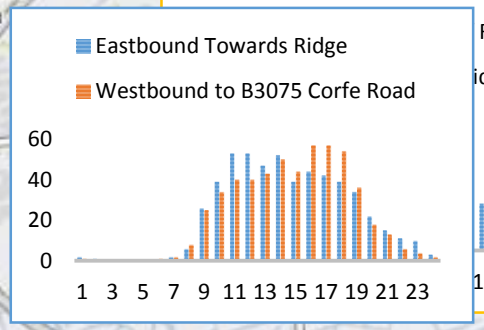
NB 199
SB 190
200

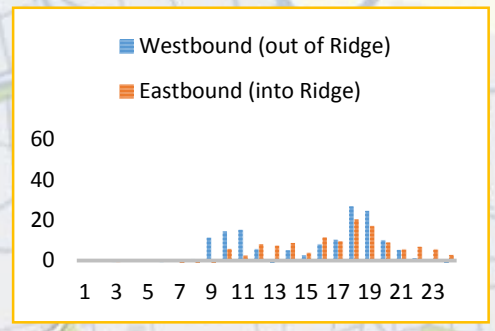
NB 91
SB 129

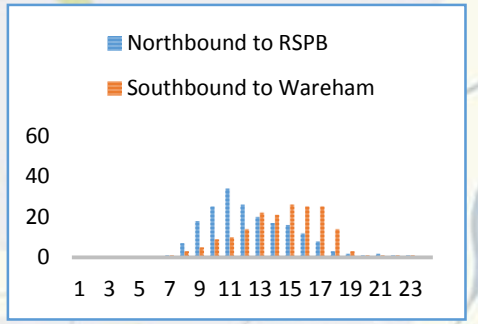


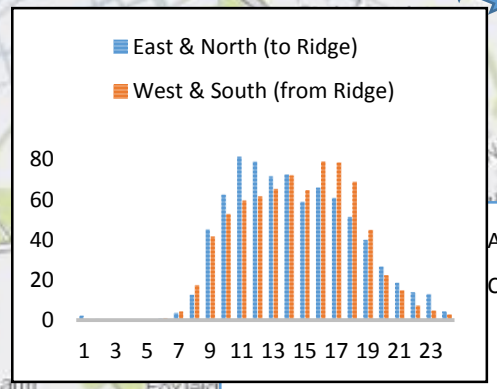


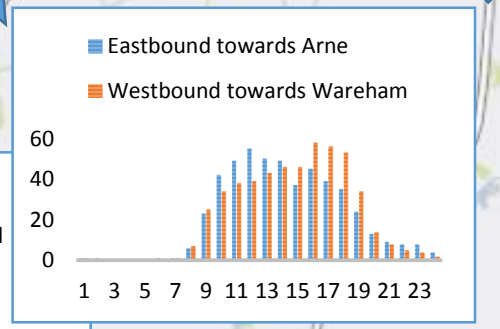
Mean hourly traffic flow (whole survey period) Oct 2019

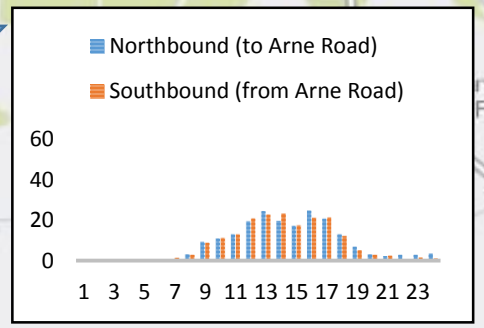


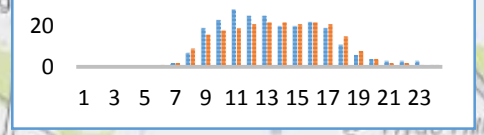


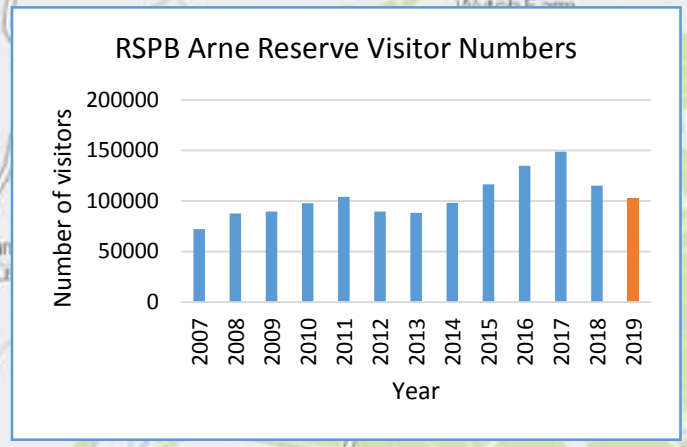








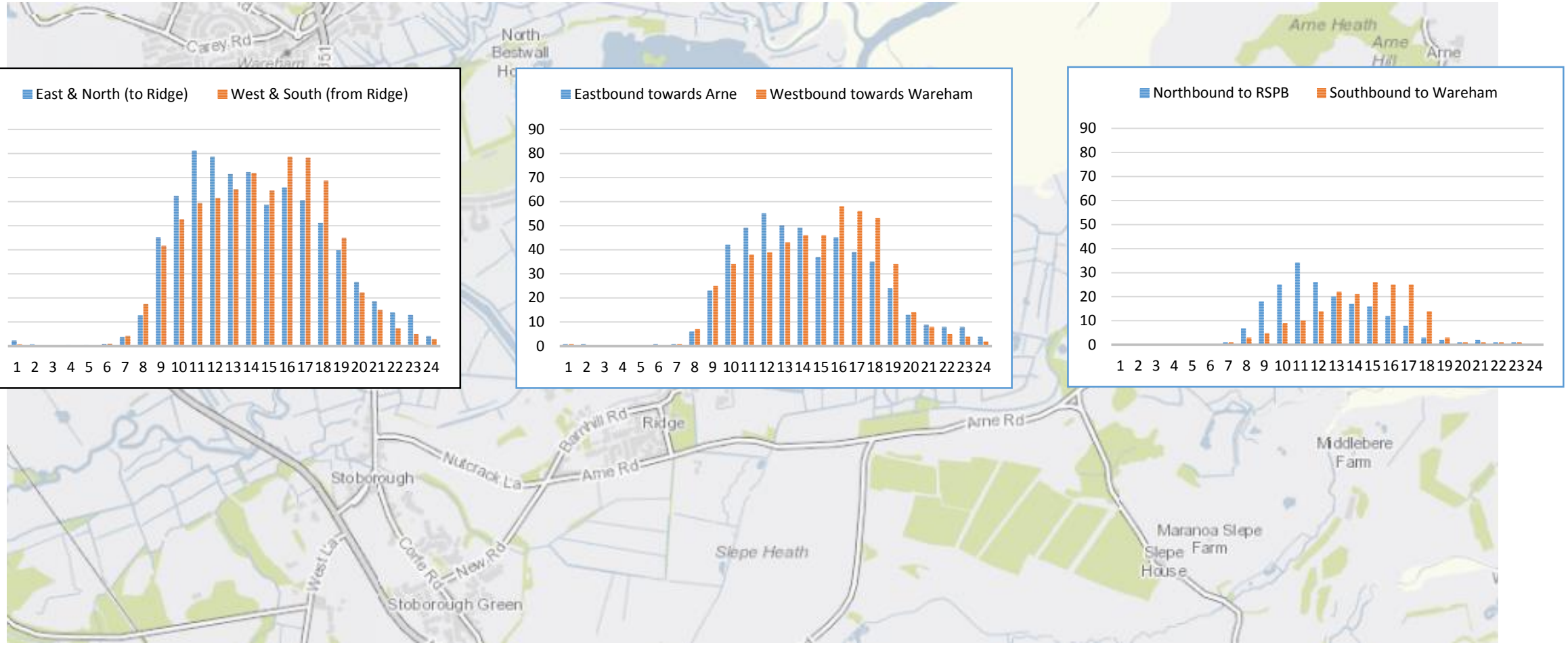




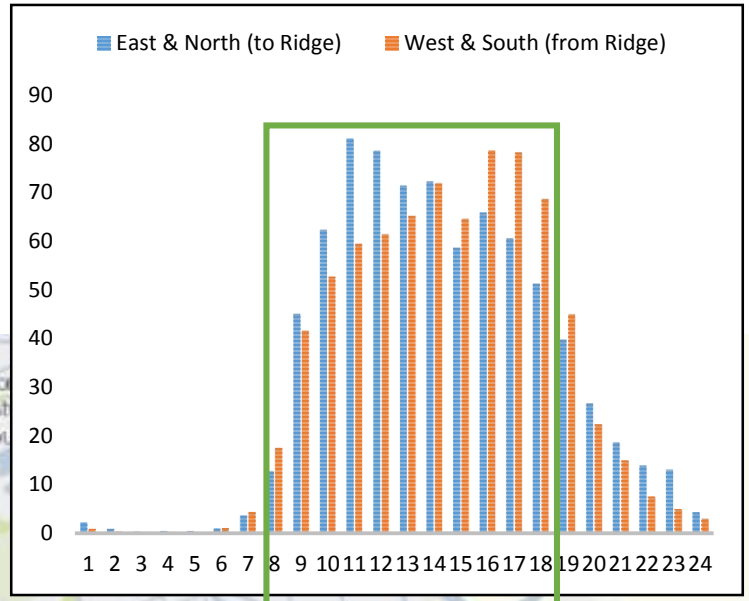
Arne Road

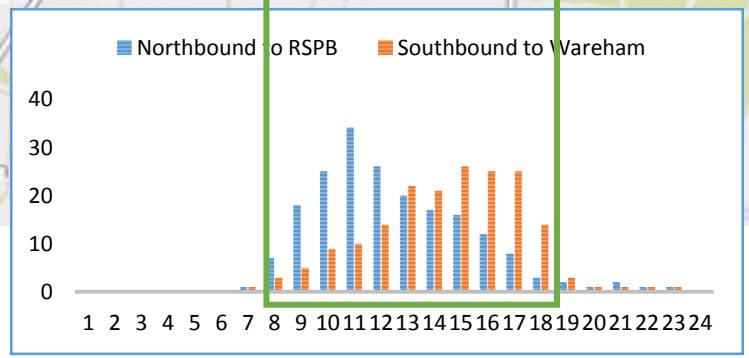
Corfe Road

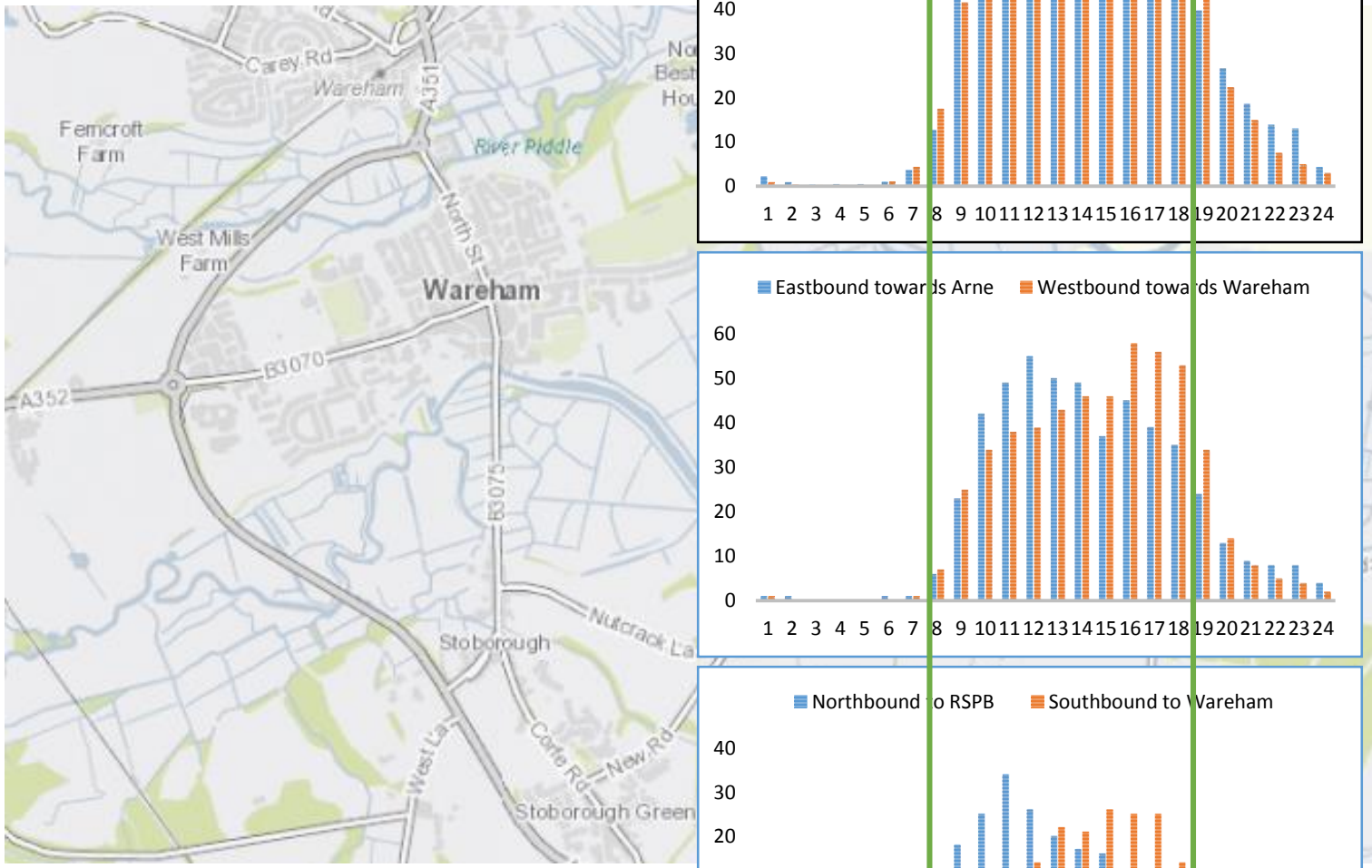
Traffic on Arne Road



Traffic on Arne Road







NT Middlebere

The National Trust managed heathland at Hartland Moor has 3 bird hides, two looking over the heathland and one overlooking the Middlebere channel of Poole Harbour (the Middlebere hide). The two heathland hides are not well used, but the Middlebere hide provides good views of flocks of autumn and winter waders and ducks

During October half-term 2019, the number of visitor cars parked at Middlebere was counted daily during the week and on the Sunday.

Date	Middlebere Car Park	Hartland Road
28/10/19 (11.00)	2	2
29/10/19 (13.00)	1	2
30/10/19 (08.45)	2	2
31/10/19 (08.45)	2	5
01/11/19 (10.45)	1	4
02/11/19	No count	No count
03/11/19 (14.00)	11**	4

Natural England Sunnyside Farm – Visitor Parking

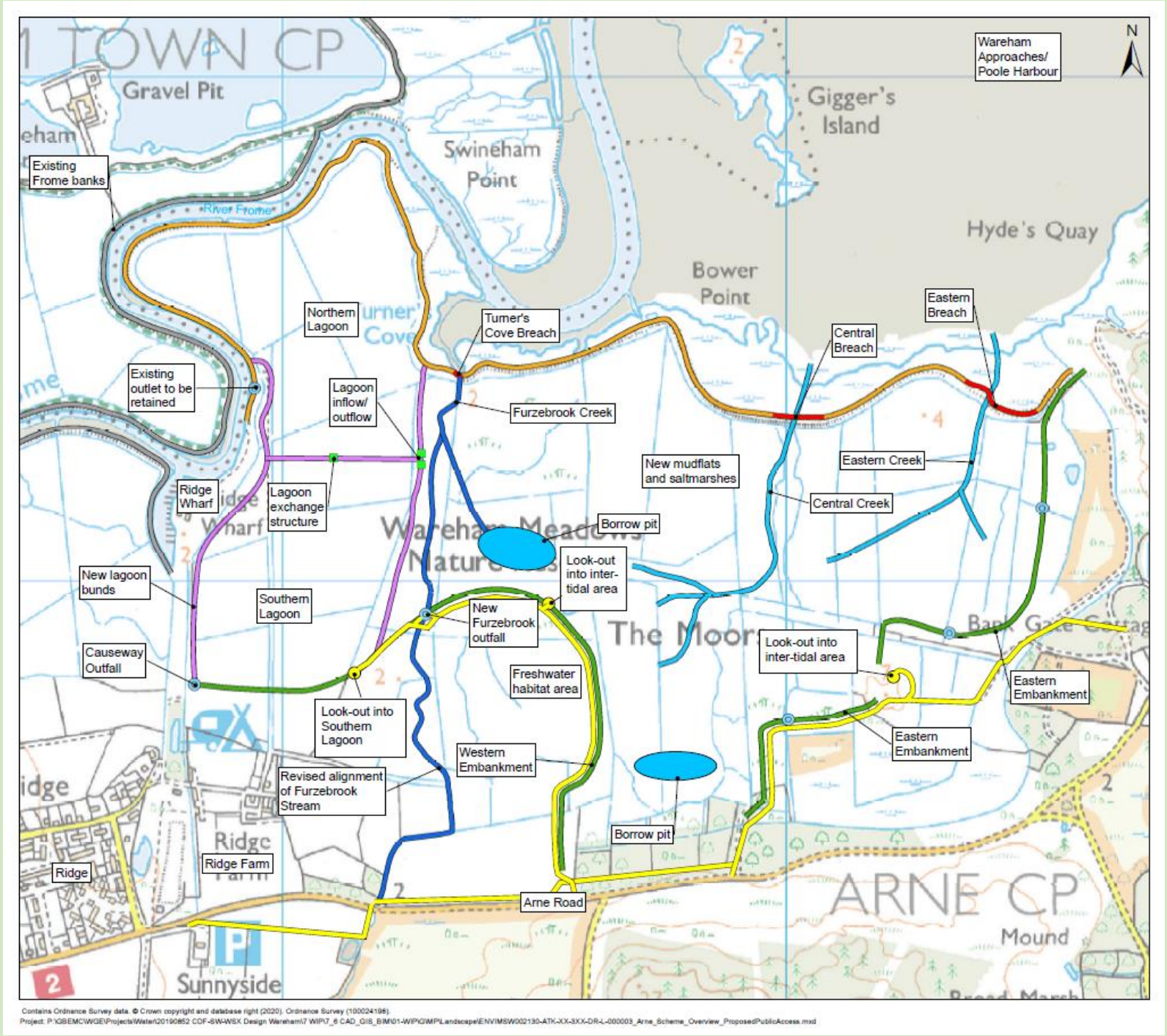
The surrounding farmland is primarily used by dog walkers although there is also a bird hide along the old tramway overlooking an area of wetland on Stoborough Heath NNR. This site has breeding lapwing and when wet supports the usual wildfowl and waders associated with Poole Harbour

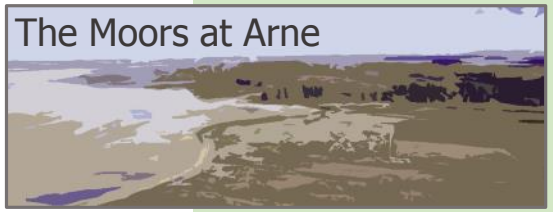
The car park at Sunnyside farm can comfortably accommodate 15 cars although regular, ad hoc observations suggest that the car park rarely has more than a single car parked

The car park gate is locked overnight although there is space outside the gate for a car to park

Date	Time	
30/10	11.45	0
6/11	08.45	1
7/11	08.40 09.30 16.30	1 0 0
11/11	12.00	0
12/11	14.15	1
13/11	08.30 09.00	2 0
20/11	08.40	1
2/11	08.45	0
25/11	09.50	0 locked

Open Forum


Wareham Approaches/ Poole Harbour
N
Gravel Pit
Swineham Point
Gigger's Island
Hyde's Quay
Bower Point
River Frome
Existing Frome banks
Northern Lagoon
Turner's Cove Breach
Eastern Breach
Central Breach
Existing outlet to be retained
Lagoon inflow/ outflow
Furzebrook Creek
New mudflats and saltmarshes
Eastern Creek
Central Creek
Ridge Wharf
Lagoon exchange structure
Borrow pit
Look-out into inter-tidal area
New lagoon bunds
Southern Lagoon
New Furzebrook outfall
Causeway Outfall
Look-out into inter-tidal area
Freshwater habitat area
Eastern Embankment
Look-out into Southern Lagoon
Western Embankment
Revised alignment of Furzebrook Stream
Eastern Embankment
Borrow pit
Ridge Farm
Arne Road
ARNE CP
Mound
Sunnyside
Key
Outlet
Breach Locations
Furzebrook
Existing Embankment (within scheme)
Existing Embankment (outside scheme)
Western and Eastern Embankments
Lagoon Embankment
Creek Network
Proposed Public Access


The Moors at Arne

Next steps

Next Meeting: February?

Future meetings:

Traffic

Public access routes

Pre Planning meeting