Not to be cited without prior reference to Marine Scotland, Marine Laboratory, Aberdeen.

MRV *Scotia*

Survey 0517S

PROGRAMME

27 April–17 May 2017

Loading: Aberdeen
Change-overs: Aberdeen
Unloading: Aberdeen

In setting the survey programme and specific objectives, etc the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Lab Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the Survey Report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

Personnel

P Hayes	(SIC)	27 April - 10 May
J Hunter		27 April - 17 May
E Armstrong		27 April - 10 May
P Stainer		27 April - 10 May
N Lacey		27 April - 3 May
D Copland		27 April - 3 May
R Leiper		27 April - 3 May
D Stewart		27 April - 3 May
L Anderson		4 May - 10 May
P Dymond		4 May - 10 May
R Duncan		4 May - 10 May
S Rouse		4 May - 10 May
R Kynoch	(SIC)	11 May - 17 May
R Gardiner		11 May - 17 May
R Main		11 May - 17 May
M Kinghorn		11 May - 17 May
P Copland		(1/2 day not overnight)

Scientific gear:

Day grabs; TV drop frame with lasers (including rectangular footprint); armoured cable; Swathe multibeam echosounder system; RoxAnn system; Scout System; and smolt trawl.

Objectives

1. To undertake bathymetric and groundtruthing survey work in connection with offshore oil and gas pipelines associated with the west of Shetland and Fladen Ground infrastructure.

2. To undertake trials of the smolt trawl in Aberdeen Bay/ Moray Firth

Estimated Days per Project: 14 days - 20083 RE01t
7 days - 20332 RE0050

Procedure

MRV *Scotia* will depart from Aberdeen Harbour on 27 April. Before making passage to the pipeline stations, and after all drills, *Scotia* will calibrate the multibeam system off Stonehaven. Once this is completed a small boat transfer will be necessary to return P Copland back to Stonehaven Harbour. The nature of the survey work will be heavily dependant on the prevailing weather conditions encountered. The proposed survey is very similar to the work conducted for the previous Renewable and Energy Programme survey in 2016. The survey work sites are annotated in Figures 1, 2 and 3.

A sound velocity profile (SVP) will be collected 500 m outside of the survey location. On completion of the SVP, MRV *Scotia* will complete a multibeam swathe along the length of the targeted pipeline. Survey speed will be four knots. The output will be checked for any anomalous features that could interact with other survey equipment. If features are identified MRV *Scotia* will relocate in the immediate area and repeat the multibeam swathe along the pipeline until a suitable length of pipeline is identified.

The multibeam data will be assessed to identify changes in the seabed substrate. The substrates will be ground-truthed using a drop-frame camera. The drop-frame will be deployed 500 m from the pipeline off the stern of the vessel using an armoured cable. The drop-frame will be kept at 1.5 m above the seabed/pipeline and towed using the vessel's bow thrusters at a speed of one knot or less (0.5 m per second) on a course perpendicular to the pipeline. Video capability on the drop-frame will be forward looking and vertically mounted. It will also have a transponder enabling its position to be monitored and recorded. The maximum time spent transecting the pipeline will be less than five seconds.

On completion of the TV tows additional multibeam transects will be run parallel to the pipeline alternating the direction of travel for each tow. This will be continued until up to 500 m of seabed has been surveyed on each side of the pipeline. Surface sediment samples will be collected using a day grab to provide additional groundtruthing information.

On completion of the pipeline survey work, MRV Scotia will relocate to Aberdeen Bay or Moray Firth to build on the 2016 trials using the Smolt trawl. This comprises a video trawl net for use pelagically close to the surface for the enumeration of salmon and sea trout smolts as they emigrate through near coastal waters in spring. The key purpose for the days allocated on *Scotia* to test the net will be to ensure that the net itself can be deployed and function correctly, and establish protocols for shooting and retrieving the net and accompanying equipment as a prelude to more extensive work during the smolt run of 2018 in the Moray Firth. The net is designed to operate close to the surface with entrained fish directed through a detachable camera and PIT detector frame at its end. Although the first deployments may be without the frame in place, it is

intended to test the deployment and operation of the camera set up and PIT detector arrangements at an early stage in the testing.

Shooting the net may require a depth of 50 m, although it is expected that once the net is underway and the doors have lifted that it will be able to operate in shallower waters.

MRV Scotia will complete half landings at Aberdeen on 4 May and 10 May to exchange scientific staff. The second half landing will be followed by the relocation of the survey work into the Moray Firth. On completion of the survey work MRV *Scotia* will return to unload at Aberdeen Harbour in preparation for unloading on 17 May.

Normal contacts will be maintained with the Laboratory.

Submitted:
P Hayes
18 April 2017

Approved:
I Gibb
21 April 2017

Figure 1

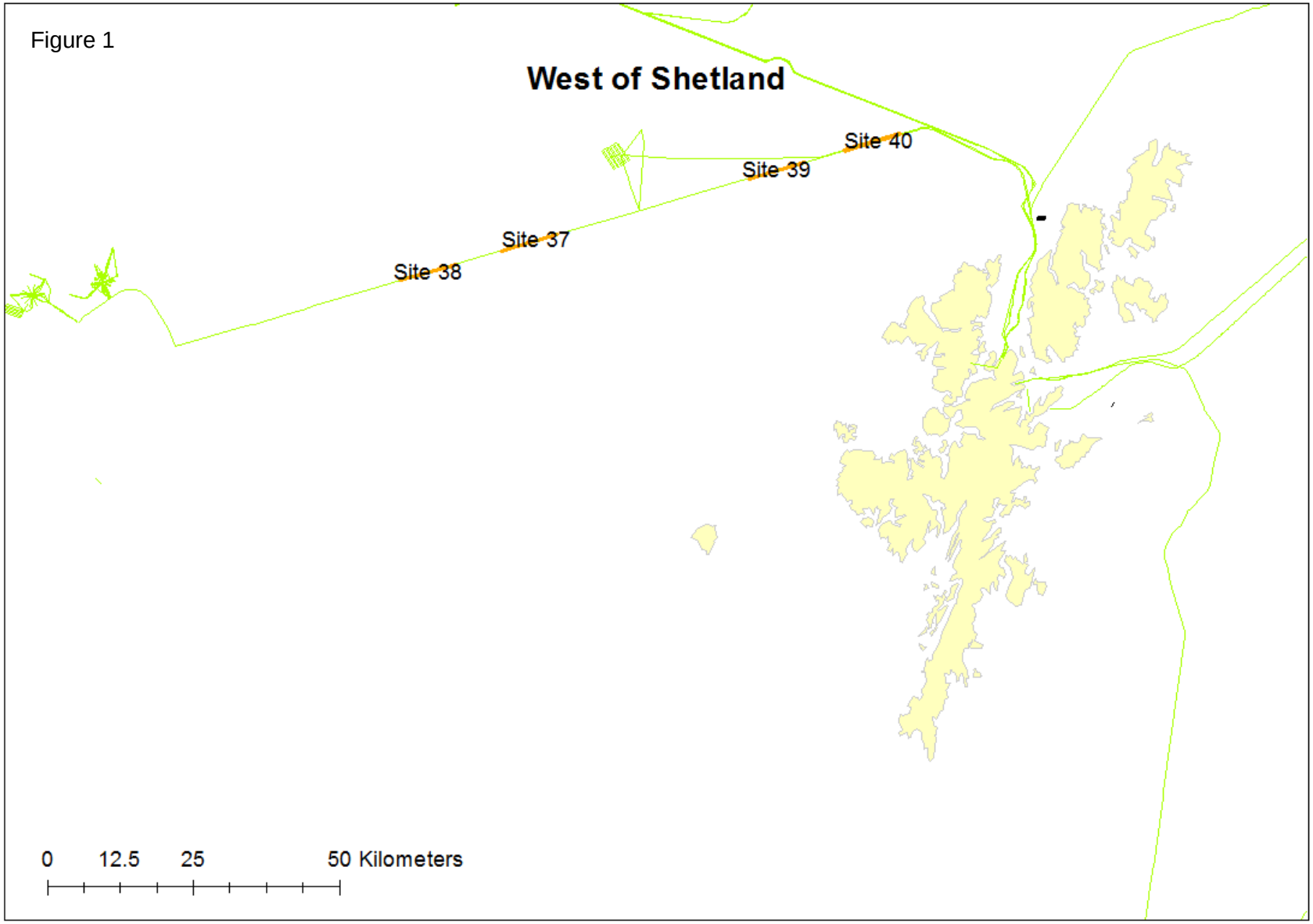

West of Shetland
Site 40
Site 39
Site 37
Site 38
0
12.5
25
50 Kilometers

Figure 2

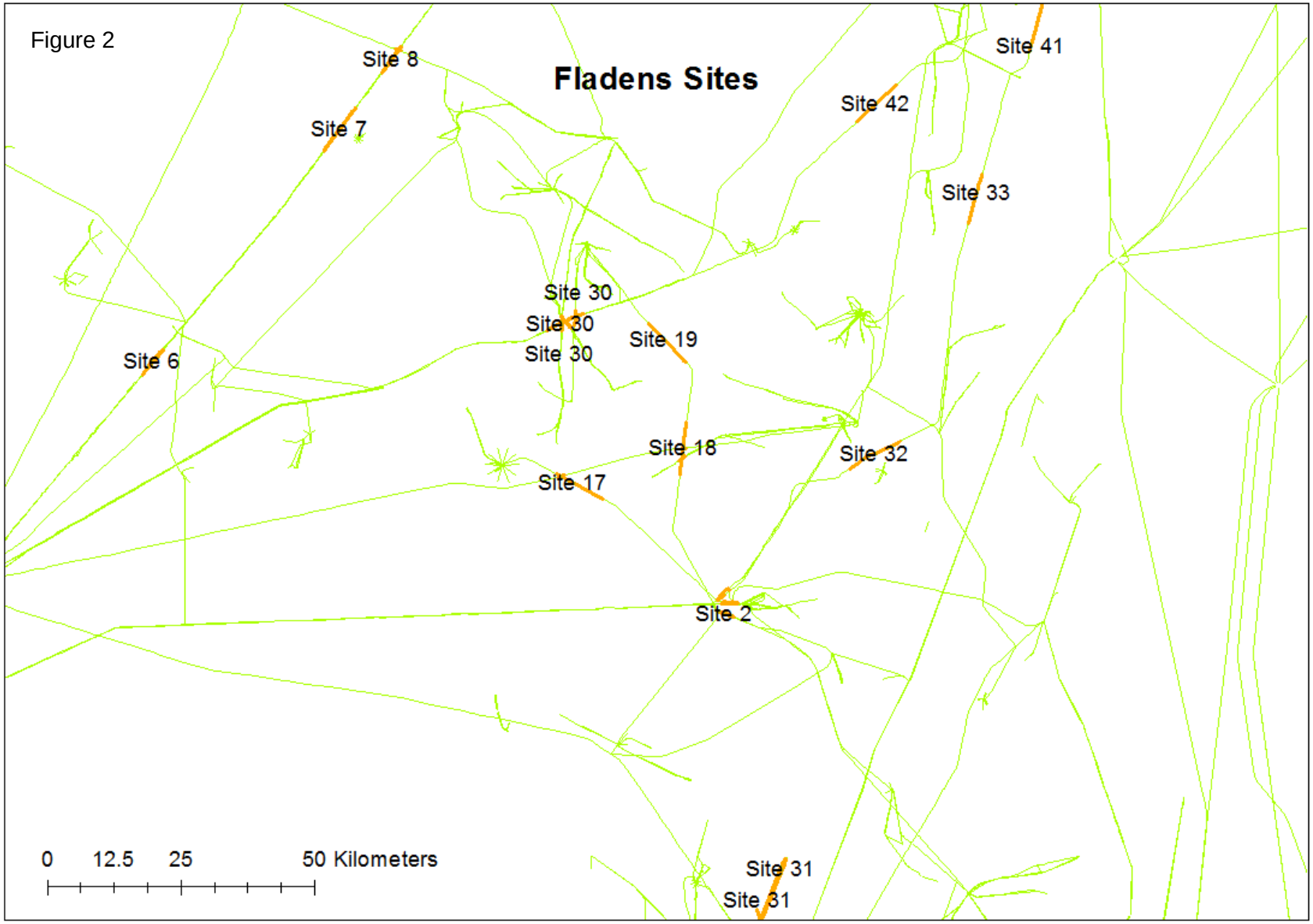
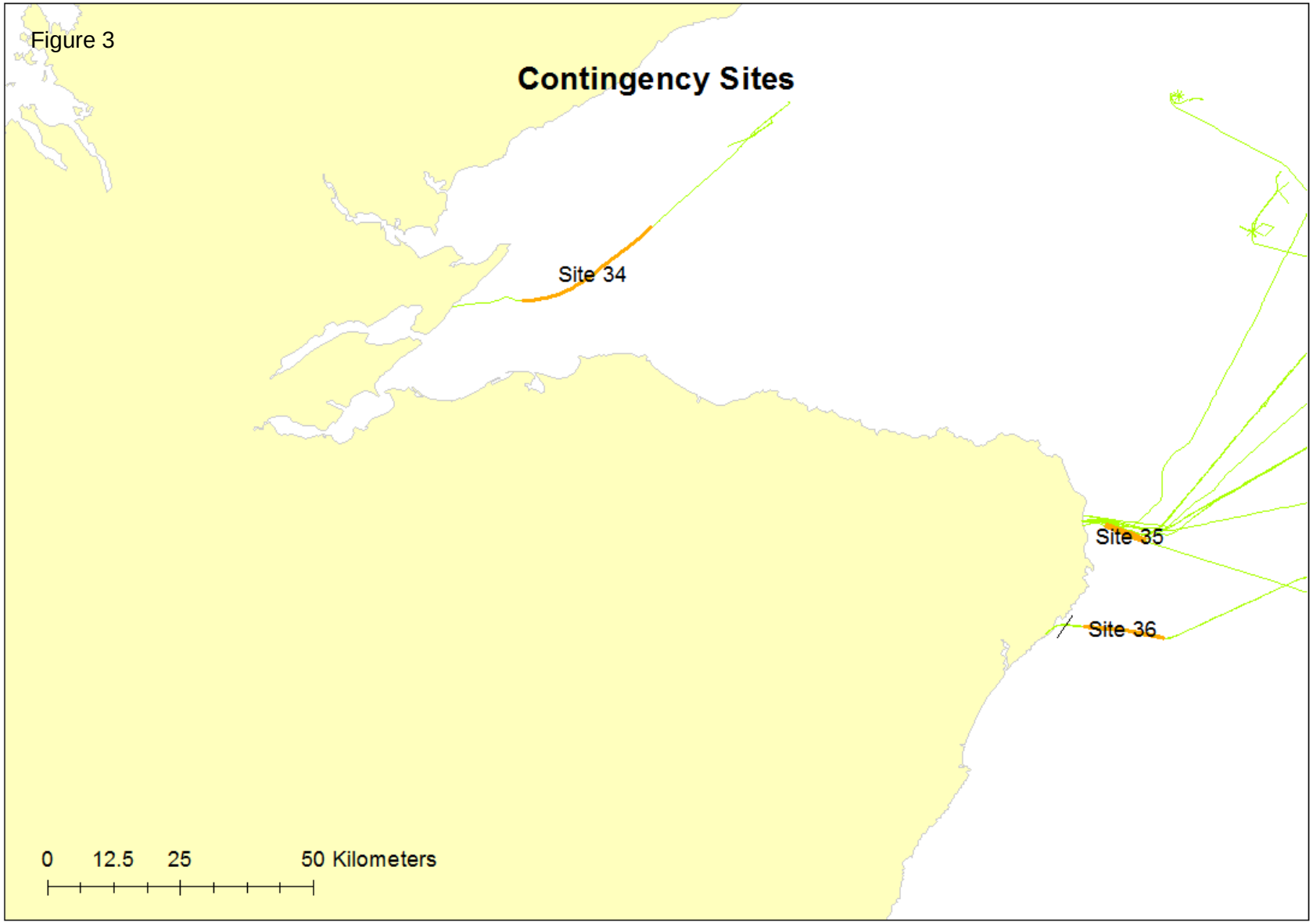

Fladens Sites
Site 8
Site 7
Site 41
Site 42
Site 33
Site 30
Site 30
Site 30
Site 19
Site 6
Site 18
Site 32
Site 17
Site 2
Site 31
Site 31
0
12.5
25
50 Kilometers

Figure 3


Contingency Sites
Site 34
Site 35
Site 36
0 12.5 25 50 Kilometers