

CHAPTER 18

THE INDIVIDUAL BATTLE SHOOTING RANGE

INTRODUCTION

1801. **General.** In the progression of training prior to Live Fire Tactical Training (LFTT), the Individual Battle Shooting Range (IBSR) provides an option for the Transition to LFTT as described in Reference C (Army Operational Shooting). Existing IBSR are being upgraded following Project Odyssey recommendations. The photo below illustrates typical existing IBSR, Figures 18-2 and 18-3 illustrate new IBSR requirements.



1802. **Aim.** This chapter describes the design and construction of a standard IBSR. In particular it covers:

- | | | |
|----|----------------------|-------------|
| a. | Introduction | 1801 - 1803 |
| b. | Range danger area | 1804 |
| c. | Design | 1805 - 1806 |
| d. | Construction | |
| | (1) Targetry | 1807 - 1810 |
| | (2) Firing lanes | 1811 - 1817 |
| | (3) Control building | 1818 - 1819 |
| | (4) Services | 1820 - 1821 |
| e. | Communications | 1822 - 1823 |
| f. | Maintenance | 1824 - 1826 |
| g. | Compliance Checks | 1827 |

1803. **Description.** The IBSR is a purpose-built ETR extending to 350 – 400m for practising individuals or pairs of firers. The range is designed to practice a selection of fire positions, weapon handling skills, fieldcraft, and quick and accurate shooting at fleeting and moving targets at various distances. Two or more targets can be exposed simultaneously to train in instinctive engagement followed by rapid engagement of further targets. The range should provide defensive engagement of targets in depth from 50-400 m from the firing point/start line and a patrol exercise in which targets appear during an advance to the 300 m firing point, the limit of advance. The final 50 m is a CQB shoot which concludes with a moving target. The range allows some Stage 5 exercises to be conducted:

- a. Single firer using various firing positions on the main firing point then moving down range selecting cover and engaging targets down range.
- b. A patrol exercise of two firers in each lane.
- c. A static defence exercise with four firers in each lane operating as a fire team.

RANGE DANGER AREA

1804. To establish the IBSR RDA, the WDA template is applied from each firing position to each target to build up an overall RDA trace. To ensure bullets do not leave the RDA, it is essential that shooting only takes place between the limit of advance posts onto designated targets. The production of an accurate RDA trace depends on fire and target positions being carefully surveyed. TAS(RE) must be requested to check or calculate all IBSR RDA. The RDA must be re-calculated if target or fire positions are changed.

DESIGN

1805. **Criteria.** The standard IBSR has four lanes each 25 m wide and 350 – 400m long but local requirements may alter the number of lanes to be provided. A typical range layout is illustrated in Figures 18-1 and 8-2. Target spacing and layout remain the same in each lane but cover may be varied to suit the terrain. The following weapons may be fired:

- a. **SA.** Rifle, LSW, GPMG, SMG and pistol firing 5.56, 7.62 and 9 mm ammunition.
- b. **IWS and Grenades**
 - (1) ILAW / NLAW sub calibre.
 - (2) 51 mm light mortar firing Smk and Illum provided the ADH of 2000 ft is activated and the WDA is contained within the overall RDA trace.
 - (3) Grenade Hand Smk Training and Grenade Hand Prac L111 may be thrown from behind cover on the main firing point into the grenade targets.

1806. **Siting.** The range floor for a four lane IBSR requires an area 350 m long by 100 m wide. Sufficient space is required behind the start line for troops to assemble and for the range control building. The range is best sited on ground that is relatively level over the first 100 m, rising over the remainder of its length and preferably to some distance beyond. The QE from any point of engagement must not exceed 150 mils (8.5⁰). Bush and shrub growth should remain in a natural state with non-ricochet inducing obstacles providing cover for fire and movement skills. Care is required to ensure that the most distant targets are not silhouetted on the skyline. A well drained site is essential as target mechanisms have to be dug in. No deep, steep sided streams or ditches, or rocky outcrops are permitted. The natural terrain should be disturbed as little as possible consistent with the ability to ensure that:

- a. Target numbers 1-7 are visible from the main firing point and from the various minimum engagement distances.
- b. Target numbers 8-10 and the moving target are visible from the 300 m limit of advance line.
- c. All targets are visible to the console operators in the control building.

CONSTRUCTION

TARGETRY

1807. Target Locations. Ten FET are positioned in each lane at a minimum of 5 m inside the lane boundaries. On existing ranges targets are typically fitted to FET as follows:

- a. Figure 12s usually for target numbers 1- 4 and 8.
- b. Figure 11s usually for target numbers 5-7 and 9-10.
- c. Figure 11 or 12 may be presented as target number 7 that appears in a window. The target is to suit the window size and design.

1808. Fixed Electric Target Modification. The FET are modified to allow the target mechanism to be turned through 3200 mils (180°) with the target fitted to the rear of the mechanism. The modification requires the cam inside the limit switch box to be turned through 3200 mils 180° , and the left and right target clamps on the target shaft changed over. This will allow the target to rise and fall to the rear and clear of the mechanism. It also enables the target mechanism to be positioned in an open-ended galvanised steel box known as an 'oven'. The open end has a security cover for when the targetry is not in use.

1809. Fixed Electric Target Pit. The FET equipment is protected with timber or rubber products, earth and armour plate. Backsplash protection is provided by either sound timber at least 100 mm thick, or 500 mm of well compacted earth or sandbags. The pit is large enough to accommodate the target in the down position and deep enough to locate the FET below the level of the range floor. The pit must be self draining. FET may be set at ground level and the protection from all potential direct fire provided around it.

1810. Moving Targets. Moving Target Systems) are used on these ranges on the 350 or 400m target line. The visible target run is approximately 20 m long with a close-boarded wooden fence that obscures the target from view at each end of the run. The target mechanisms are protected by a mantlet of grassed earth 1.5 m thick with a vertical revetment at the rear.

FIRING LANES

1811. General. Each lane on the standard IBSR contains the features set out in the paragraphs that follow.

1812. Targets. 10 FET are connected to a console in the control building and Figure 20 targets are mounted on the two MTS(R), each of which serves two lanes and forms the final targets.

1813. Limit of Advance Line. The limit of advance line at 300 m is clearly indicated by a wall incorporating building facades with gates, fencing, bushes

etc, in a broken line across the full width of the range. This provides a variety of cover from which the firer may engage the final series of three FET and the moving targets in the CQB section.

1814. Main Firing Point. The main firing point, from which the defensive engagement takes place, consists of ten different types of cover for each lane, as shown in Figure 18-3. The firing point may be at ground level or raised on a bund up to 900 mm high. It may be surfaced with 10 mm single size rounded gravel chippings contained within timber profile boards.

1815. Minimum Engagement Distance Posts. A minimum engagement distance post is required for each target with the target number painted on it and which is clearly visible to the RCO and to safety supervisors following the firers. Targets are not to be engaged after the minimum engagement distance post has been passed.

1816. Boundary Posts. Whilst it is highly desirable to interfere as little as possible with the natural terrain, it may be necessary for safety reasons to provide some indication to the firer of the limits of his particular lane to prevent engagement of the wrong target.

1817. Landscaping. A series of landscape items of building facades, rural or farm structures, fences, gates etc must not impede the view of the targets, or create a backslash or ricochet hazard. Additional landscaping may enhance the IBSR by improving existing features. Range staff should exercise ingenuity in planting shrubs and encouraging the natural development of the range area.

CONTROL BUILDING

1818. General. The control building is located approximately 10 m centrally behind the line of the main firing points. The control room is on the first floor to ensure a good view over the range. Normally on the ground floor are the Range Warden's workshop and store with the troop shelter alongside. The concrete roof of the troop shelter also forms a viewing platform accessible from the control room.

1819. **Fittings.** The following fittings are required in the control building:

- a. A console bench running the full width of the control room. The targetry control consoles are identical to those on an ETR.
- b. A full width window in the front, returned at each end of the control room to give an unobstructed view of the whole range. This window ideally should slope inwards from the top to eliminate glare and keep it clear of rain.
- c. Three work benches in the Range Warden's workshop and, if FET mechanisms are to be tested, a low voltage electricity supply.
- d. Bench seats, and hat and coat hooks on three walls of the troop shelter.

SERVICES

1820. **Electricity.** Power requirements will vary from site to site. In addition to target operation, electricity is required for lighting, heating and power outlets in the control room and Range Warden's workshop; 50kVA TP&N is generally satisfactory. Generators are impractical due to maintenance difficulties but a mains electricity supply to an isolated range may be an excessive cost. All external cables are to be buried underground to a depth of 600 mm. Cable runs to the targetry are to be taken down one flank of the range with feeder spurs across the range on the each target line. Connection pits or points must not create a backslash or ricochet hazard. All cables and fittings must be weatherproof and internal cables should be in steel conduit.

1821. **Water and Drainage.** Water supply and drainage will be required.

COMMUNICATIONS

1822. **External.** A means of summoning the emergency services, ideally a land laid telephone, is to be available.

1823. **Internal.** A PA system is installed with a microphone in the control room and on the main firing point for controlling practices and reading out scores.

MAINTENANCE

1824. **Responsibilities.** Maintenance is the responsibility of the RAU. Responsibilities may be divided as follows:

- a. **Range Warden.** See Reference A1.
- b. **Property Management.**
 - (1) Grounds.
 - (2) Fencing and sign posting (may be DE). (See Chapter 2.)
 - (3) Structures, roads and drainage including stability of slopes and erosion control.
 - (4) Water and electricity supplies.
 - (5) Periodic refurbishment of the range structure.
- c. **Equipment Management.** Repairing and servicing equipment installed by single Service contract.

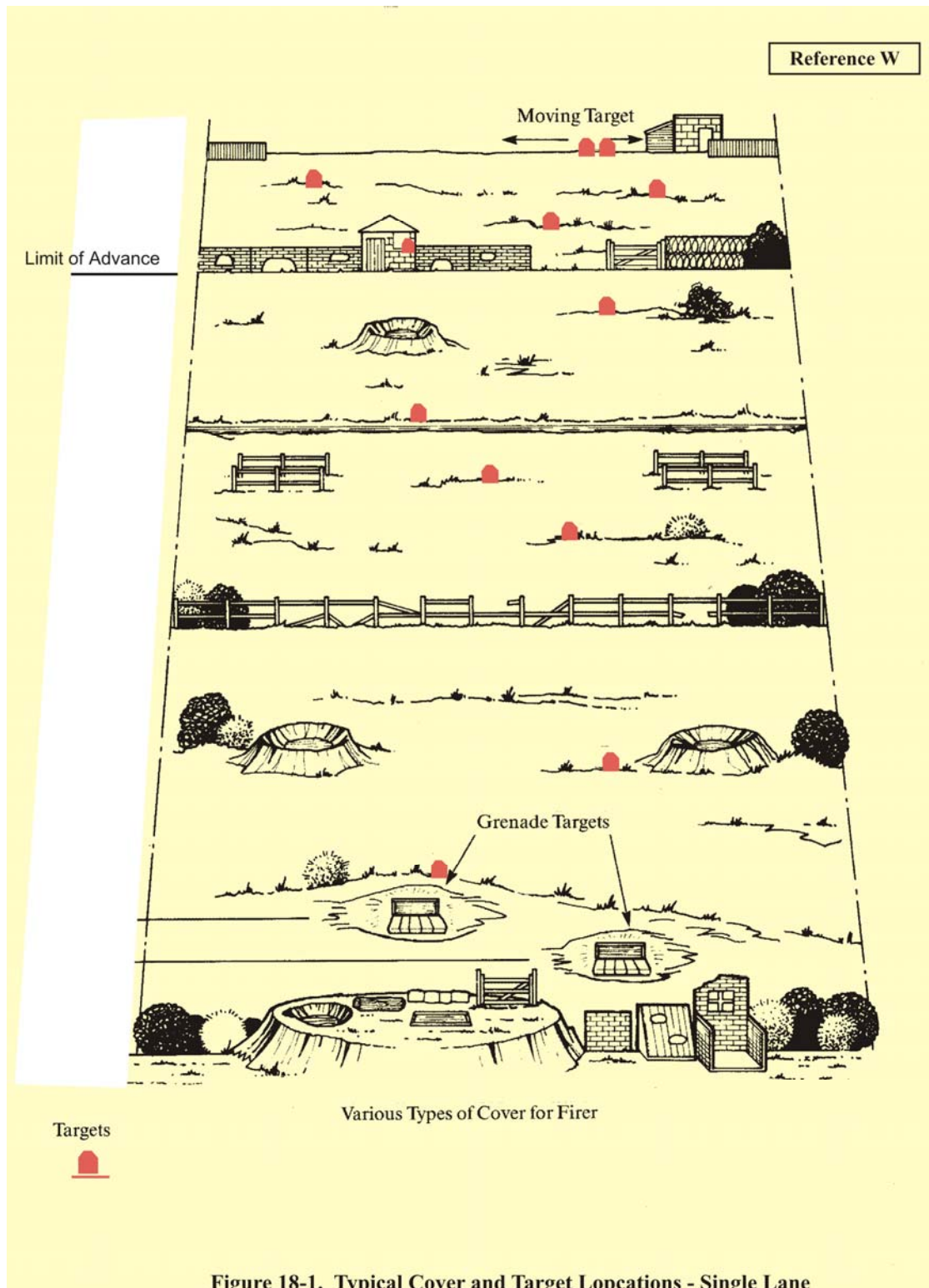
1825. **Frequency.** Proper maintenance is dependent upon good liaison between the Range Warden and the RAU, and on properly scheduled maintenance periods. A heavily used range may need one day's maintenance each week plus one or two days' maintenance by the Range Warden each month. Two closed periods of a week or so may be needed each year for building and earthworks repair; this work should be combined with the contract repair of equipment.

1826. **Shot Damage.** Shot damage to the constructed cover and target facades will require careful monitoring and repair if the IBSR is not to deteriorate. Grounds maintenance is of particular importance. Grass and shrubs help form the natural cover and will need cutting, pruning during the growing season and careful maintenance during wet or winter use. Particular care is to be taken to ensure that soil erosion does not expose backsplash hazards such as target mechanisms or rocky outcrops on the range floor.

COMPLIANCE CHECKS

1827. The following should be checked:

- a. Authorised weapons, ammunition and practices.
- b. Lane identification and alignment from all firing positions.
- c. Target exposure.
- d. Protection to the moving mechanism and housing, if applicable.
- e. Quadrant Elevation MAX (150mils).
- f. Template alignment from each firing position.



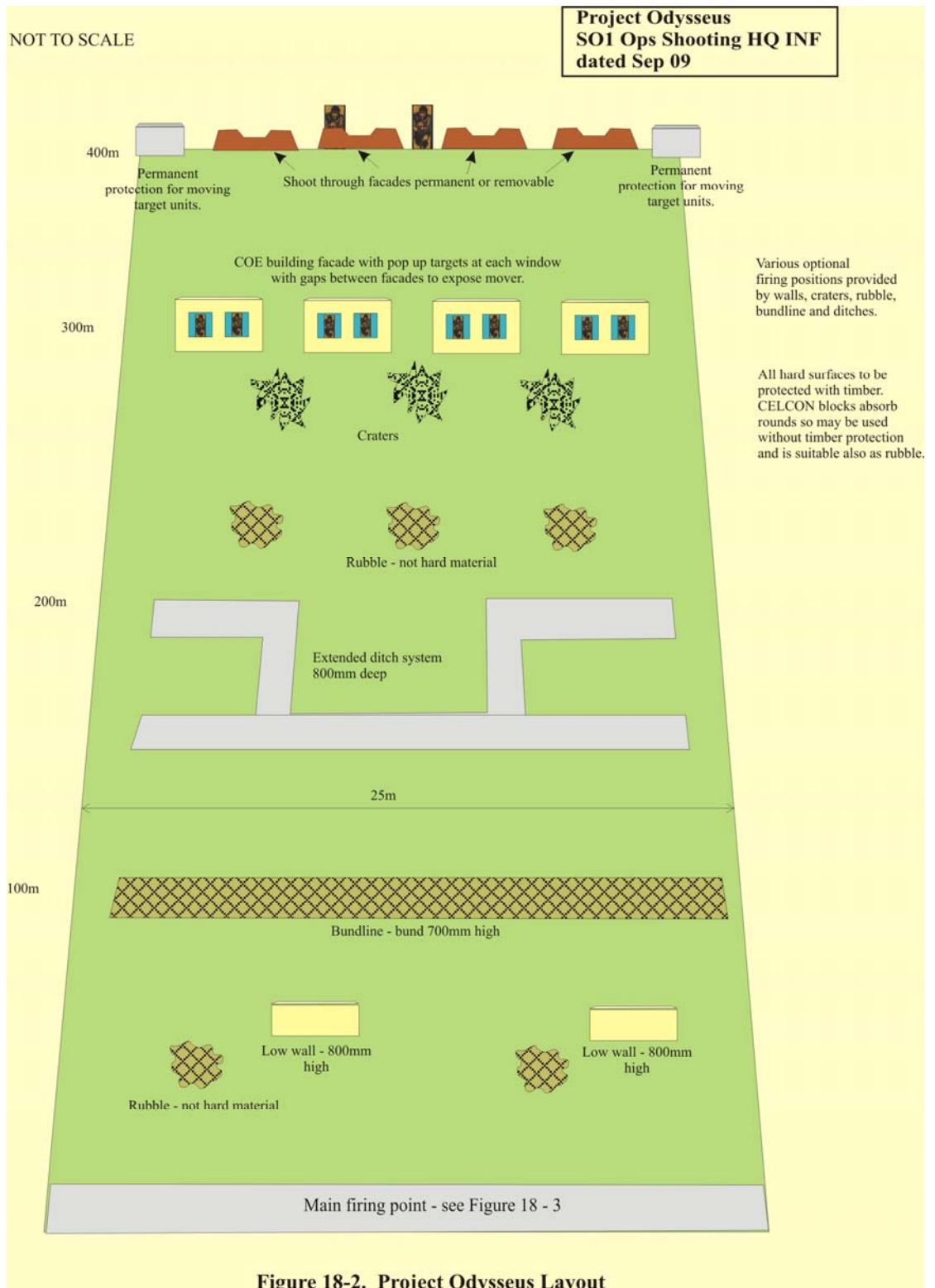


Figure 18-2. Project Odysseyus Layout

