Field specifications & technical requirements

EDITION 2020

International Hockey Federation
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1. INTRODUCTION

This document has been prepared to enable the Organising Committee of the Olympic Games (OCOG) to provide hockey fields to the standards required for the Olympic Games. It forms part of the FIH's Olympic Event Guide and should be read in conjunction with the other FIH documentation.

The FIH reserve the right to amend, delete or add to these requirements at any time.

For clarification or further information on the FIH's field, lighting and sports equipment requirements please visit www.fih.ch/hockeyturf or contact facilities@fih.ch.

The hockey sport's facilities comprise competition and training fields. Each field will have a foundation layer, incorporating a suitably designed drainage system, engineered base and a playing surface comprising a specialist synthetic turf and shockpad (underlayer) playing surface, along with supporting infrastructure.

Traditionally, the hockey fields provided for the Olympic Games have been constructed in the same way as fields intended for long-term use. This has included extensive civil engineering works to construct the necessary foundations, drainage system and pavement base. This is still the most approach if fields being built for future Olympic Games are to be retained as legacy venues for the benefit of hockey.

Field technology is now, however, allowing temporary overlay fields to be built, using a modular base construction. Providing the use of this technology does not compromise the long-term legacy benefits to hockey in the host country, the FIH endorses its use whenever there is a benefit in either locating one of more of the Games' fields in an existing sports stadia, or building temporary fields that can be relocated to other locations following the Games.

Irrespective of which construction method is used the foundations and base for each field should be designed and constructed in accordance with FIH Standards and guidelines, as detailed in this document, and the requirements of the manufacturer of the hockey turf playing surface.

With respect to the procurement of the hockey turf playing surface, the FIH will opt to nominate a Sole Supplier to the OCOG, in accordance with the rights granted to International Federations by the International Olympic Committee (IOC). In accordance with IOC guidelines, the nominated supplier will enter a contract with the OCOG, to supply an FIH approved hockey turf and shockpad (underlayer) to each of the Game's competition and official training fields.

2. SUSTAINABILITY PRINCIPLES

The FIH endorses and advocates the IOC's policies on sustainability. The design and construction of the fields should be based on the principals of the IOC's *Guide to Sport, Environment and Sustainable Development*, the IOC's *Olympic Games Guide on Sustainable Sourcing* and the IOC's *Sustainability Essentials – A Series of Practical Guides for the Olympic Movement*.

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The FIH recommends all parties involved in the design and construction of the hockey facilities be accredited to ISO 14001: Environmental Management Systems .

3. DEFINITIONS

TERM / ACRONYM	EXPLANATION
Competition field	a field used for competitive games during the Games
Class 1 hockey field	FIH certified field meeting the requirements of a FIH Class 1 hockey field, as defined of the *FIH Hockey Turf and Field Standards* (previously known as the FIH Global Elite category)
Class 2 hockey field	FIH certified field meeting the requirements of a FIH Class 2 hockey field, as defined of the *FIH Hockey Turf and Field Standards* (previously known as the FIH Global category)
FIH Hockey Turf and Field Standards	all parts of the *FIH Hockey Turf and Field Standards*[1], applicable 30 months before the Games,
FIH TV Lighting Guide	*FIH Facilities Guide – Sports Lighting for Broadcasting 11 a-side Hockey, Outdoors*[1], applicable 30 months before the Games.
FIH Lighting Guide (non-televised matches)	*FIH Facilities Guide – Sports Lighting for Non-televised Outdoor Hockey*[1], applicable 30 months before the Games.
Field (also known as the Pitch)	the full area comprising the FoP and run-offs
Field of play (FoP)	the playing area contained within the side lines and back (goal) lines
Hockey turf	a synthetic turf surface specifically designed for the game of hockey
Global category hockey turf	FIH Approved hockey turf meeting the requirements of the global category of product approval, as defined of the *FIH Hockey Turf and Field Standards*
Media and operational zone	a margin outside the run-offs that is used by event management.
First official hockey event	Either the Olympic Hockey Test Event or the Olympic Games themselves, whichever occurs first.

[1] Available at www.fih.ch/facilities

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Run-offs	margins around the perimeter of the FoP that form safety zones for players
Temporary Overlay Pitch (TOP)	Means of constructing a hockey field using a temporary base construction
Warm-up / training field	a supplementary facility provided to allow teams to warm-up and train

4. FIELD REQUIREMENTS

4.1. Hockey Turf playing surface

The same hockey turf product shall be laid on each field. It shall be an FIH Approved Global category hockey turf, supplied by the FIH's nominated Sole Supplier.

The colour of the hockey turf shall be signal blue, or similar and approved by the FIH. The same colour shall be used on each field of play and perimeter run-offs.

Each field shall be solely marked for hockey in accordance with the Rules of Hockey, applicable at the time of the Games. Lines shall be 75mm wide, white in colour and in-laid or tufted into the hockey turf. 5m dashed circle lines adjacent to the shooting circles are required.

4.2. Number of fields

Subject to ratification of the format of the hockey tournament, for a specific Games, the following hockey fields will be required:

1 Two (2) Competition Fields, which shall be 11 a-side hockey fields designed to comply with the FIH Class 1 category of field certification.

2 Two (2) Warm-up/training fields, which shall be 11 a-side hockey fields designed to comply with the FIH Class 2 category of field certification.

4.3. Field dimensions and layouts

The competition field and warmup/training facility shall comply with the layouts shown in Drawings 1 and 2 of this document, as appropriate.

4.4. Field orientation

Unless otherwise agreed, the fields shall be aligned North/South, with a maximum deviation from north of ± 15^0.

4.5. Field Drainage

The fields should incorporate a sub-surface drainage systems (vertical or horizontal) that is designed to cater for a rain-fall event of at least 150mm/hr, or a one in ten year rain-fall event, whichever is greater.

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4.6. Field Profile

Each field shall be built with a profile that satisfies FIH's Preferred Gradient requirements detailed below:

Longitudinal gradient along the length of the field	≤ 0.2%
Lateral gradient across the field	0.4%

A number of different field profiles may be used, including single planes, envelope and ridge profile. Irrespective of which is chosen the profile should be symmetrical around the central axis of the field and it should not cause the hockey turf to dry inconsistently across the field.

If an envelope or ridge profiles are used, the change in grade shall not adversely affect the consistency of the ball roll or exceed the requirements for surface regularity specified in the *FIH Hockey Turf and Field Standards*.

In locations where climatic or geographic considerations mean fields meeting the preferred gradients may not have adequate surface drainage (i.e. in areas subjected to intense rain-fall events or where free draining sub-base aggregates are not available), a field profile that complies with the FIH's maximum gradient requirements of 1% in any direction may be used providing the profile does not adversely affect the ability of the field to satisfy the Global category ball roll consistency requirements as specified in the *FIH Hockey Turf and Field Standards*.

4.7. Perimeter fencing

Each facility shall be fenced to ensure hockey balls are contained with the field or court. Fencing mesh may either be:

- 3mm HDPE (High Density Polyethylene) braided netting ball catch netting suspended from tensioned cables and fixed to prevent it billowing in the wind
- weldmesh/chainlink panels
- a combination of panels and netting.

The fencing mesh (normally 40 or 45 mm) shall not allow hockey balls to pass through, but it shall allow spectator visibility.

4.8.1 Fencing heights

Fencing heights should be determined by assessing the risk of balls leaving the facilities and striking spectators, players, event officials, etc. The minimum fencing heights shall be:

- along side-line boundaries: minimum of 1.2 m
- along back-line boundaries where spectator seating or access is located: 7 m
- along back-line boundaries where spectator seating or access is not allowed: 4.5 m

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4.8.2 Gates

Player and match officials' access gates to the field shall be at least 1.0m wide. They should be provided adjacent to the point of access from the changing accommodation.

At least one set of double gates shall be provided to allow maintenance and emergency vehicle access to the fields.

4.8. FIH field certification

Between nine and six months prior to the first official hockey event (either the Olympic Test Event or the Olympic games themselves) each field shall be tested by an FIH accredited test institute, to enable the field to be certified by the FIH.

Category of FIH field certification required:		
	Permanent field installation	Temporary field installation
Competition fields:	FIH Class 1	FIH Class 2 (TOP)
Warm-up/training facilities:	FIH Class 2	FIH Class 2 (TOP)

5. Sports lighting

5.1 Requirements

Sports lighting shall be provided to each field. Lighting of the competition fields shall comply with the requirements of the OBS and the minimum standards of the FIH, as follows:

Minimum FIH category of lighting required:	
Competition field:	TV1 – as specified in the FIH TV Lighting Guide
Warm-up/training facilities:	Class II, as specified in the FIH Lighting Guide for non-televised matches

5.2 Lighting certification

Lighting tests to verify performance should be undertaken no more than six and no less than two months in advance of the first official hockey event.

6. Sports Equipment

The OCOG shall provide the following sports equipment:

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6.1 Goals

Hockey goals shall be FIH Approved Goals[2].

The posts and crossbars shall be white in colour.

The goal nets shall be a similar colour to the Hockey Turf.

Number of goals required:		
Competition fields:	One set and per field	4 total
Warm-up/training facilities:	One set per field	4 total
Spare set	One set	2 total

6.2 Corner flags

Corner flags shall be mounted at each corner on each field. The flag posts shall be flexible (22mm diameter) posts, and between 1.20 and 1.5m high. They shall be fitted into surface mounted base plates or ground sockets.

Number of corner flags required:		
Competition field:	One set per field	8 total
Warm-up/training facilities:	One set per field	8 total
Spare set	One set	4 total

6.3 Team benches

Team benches shall be provided to each facility, each bench shall include:

- Seating for 10 people per bench
- Protection from rain, and shading from the sun (e.g. tinted panels or retractable blinds)

The benches shall be positioned either side and within 10 m of the centre-line. They shall not be positioned on the run-off of the fields but must allow immediate access to the fields. They should be positioned on the same side of the field as the players' access to the field and be separated from the field by a 1 m high fence (with top rail) to provide player protection.

[2] A list of approved goals may be found at www.fih.ch/inside-fih/fih-quality-programme

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Number of team benches required:		
Competition field:	Two per field	4 Total
Warm-up/training facilities:	Two per field	4 total

6.4 Hockey turf maintenance equipment

Immediately following installation of the of the fields, the OCOG shall ensure that all necessary maintenance equipment and staff, as recommended by the hockey turf supplier, is available to enable the hockey turfs to be fully maintained in accordance with the supplier's instructions.

The OCOG shall also ensure an adequate number of trained maintenance staff are available throughout the Game and if intensive rainfall (thunderstorms, etc.) may be anticipated during the Games suitable squeegees to remove any excess water ponding on the hockey turf shall be provided.

6.5 Technical Officials' booth – competition field

A Technical Officials' booth measuring a minimum of 6m by 3m and containing a table and seating for four people shall be provided. The structure shall have solid walls and a roof that provide match officials with protection from any hockey balls leaving the FoP and shelter from the weather. The design of the booth shall allow match officials a clear view of the whole field.

The location of the booth shall allow easy direct access to the FoP by match officials. I

t shall be positioned so it is aligned with the centre-line of the field and be on the same side of the field as the team benches.

It will preferably be located in the spectator stand. Where this is not possible it may (subject to FIH approval) be positioned at field level, outside of the operational zone, providing the floor is 300 mm above the booth field.

The booth shall contain a minimum of six waterproof mains electrical power outlets and LAN internet connection.

6.6 Suspended player seats – competition field

Seating for suspended players (2 per team) shall be provided. They should be located at field-level, in clear view of the Technical Officials Booth (typically within 3 m either side of the centre-line, but not within the run-off or operational zone margins).

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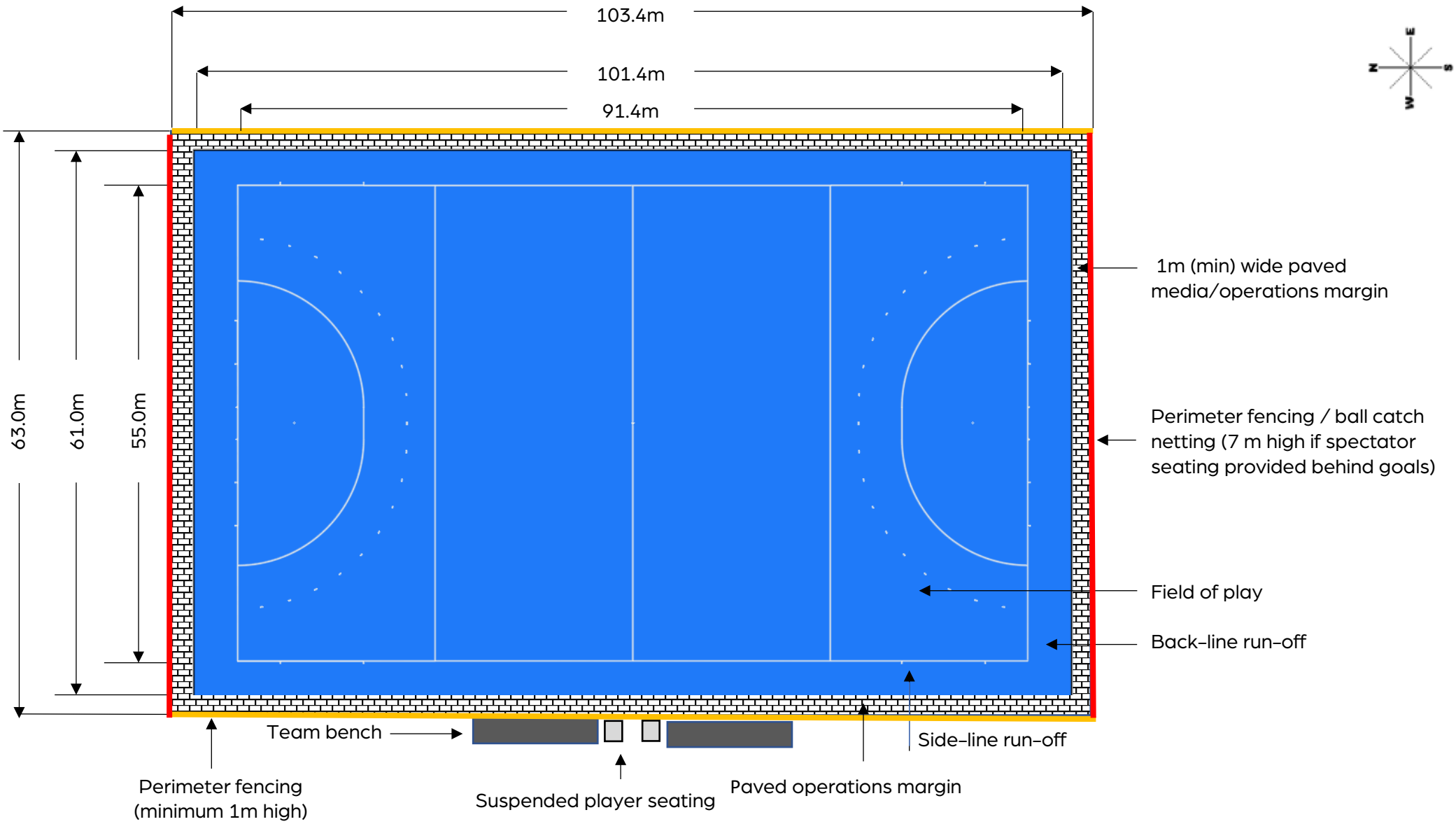
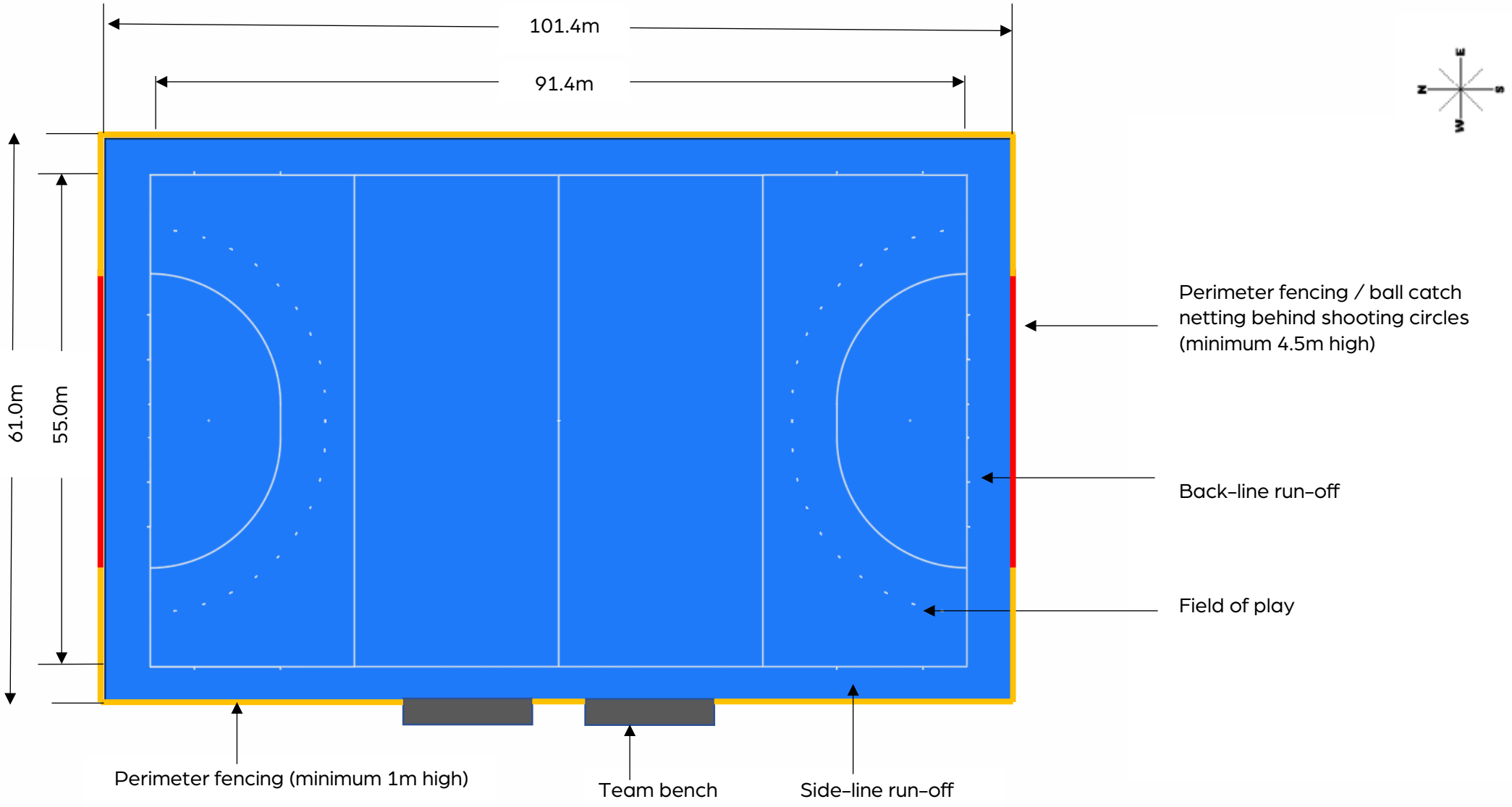
Drawing 01 – Competition field



Drawing 02 – Warm-up / training field



Example of team bench with moderate tint to glazing

Example of Techncial Official's booth – positioned within grandstand

Example of suspended player seats

	
End–line fencing	Side–line fencing

Annex A – field watering

A.1 Introduction

Historically synthetic turf fields used for elite level hockey have been watered prior to use. As part of the FIH' s sustainability objectives, the amount of water being used for this purpose is being reduced, with the aim of removing the need for watering altogether. The FIH have therefore challenged, and are working with, the synthetic turf industry to develop surfaces that provide acceptable playing conditions for elite level hockey without the need for watering.

As soon as these new surfaces are available the FIH will be using them at elite level hockey tournaments.

Until these are developed, the FIH are encouraging the building of fields that use water in as sustainable a way as possible. This includes the use of Water Efficient Turfs (WET) and innovative sub-field watering systems.

A.2 Requirements for field watering

Hockey fields that require watering to provide the required level of performance and player welfare shall have a method of irrigation that provides a uniformly wet playing surface in accordance with *FIH Hockey Turf and Field Standards*. Irrigation may be provided by:

- above-field sprinklers or rain-guns
- sub-field irrigation

In locations where any of the conditions listed below could occur, the irrigation system shall be designed to ensure the risk of water borne bacterial infection of players or spectators from diseases such as Legionnaires Disease is eliminated:

- The water temperature in all or some parts of the system is between 20 °C and 45 °C;
- Water is stored in an open loop system;
- Water is re-circulated;
- There are sources of nutrients such as rust, sludge, scale, organic matter or biofilms within the irrigation or storage system;
- Local climatic conditions are likely to encourage bacteria to multiply.

A.3 Above-field irrigation

If above-field irrigation is to be used there should be no sprinklers located within the FoP or within 2m of a goal or side-line. Rain-guns shall not be located within the run-

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offs. The design of the irrigation system should consider prevailing wind directions and minimise water spray drift onto spectators.

The minimum quantity of water applied to the playing surface shall be in accordance with the requirements of the installed Hockey Turf and shall be applied within 10 minutes.

The irrigation control system should allow varying cycles and individual programmes to ensure the entire playing area and surrounds can be watered. It should allow the following cycles:

- 8 minutes;
- 3–4 minutes;
- Single station activation.

Adequate water storage shall be provided to ensure the field(s) can be fully watered in accordance with the projected schedules of play during the Event.

The sprinklers or rain guns shall be capable of sectoring to 90° or 180°. The discharge rate shall be such that an irrigation cycle of all six emitters (operating in matched arc pairs) shall achieve an even precipitation over the FoP as specified in the *FIH Hockey Turf and Field Standards*.

A.4 Sub –field irrigation

The irrigation control system shall ensure water levels are uniformly maintained throughout a game with the ability to top-up during breaks in play as required.

The control mechanism shall ensure that optimum playing conditions are retained at all times and that ponding of water within the Hockey Turf surface does not occur. The system should be sufficiently responsive so that it can self-adjust to any rain-fall event occurring during a game, so there is no adverse effect on play.

A.5 Ancillary watering

Back-up large bore hoses with a suitable supply shall be provided for additional manual watering of the fields, as necessary. These should be stored close to the field (not on the Run-Offs) to enable rapid deployment and should be stored safely to avoid tripping hazards.

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