11 A-SIDE HOCKEY FIELD
FIH QUALITY
CATEGORY 2

FIH-Feldzertifizierung

Hockeystadion Olympiapark Berlin, Berlin, Deutschland

Die FIH freut sich, bestätigen zu können, dass dieses Hockeyfeld getestet wurde und nachweislich die Anforderungen an Konstruktion, Leistung und Spielerschutz eines FIH-Hockeyfeldes der Kategorie 2 erfüllt.

Hockey-Rasen	*Domo Ultimate Pro EL15*
Hergestellt von FIH Preferred Supplier	*Sports & Leisure Group N.V – Domo Sports Grass*

DR. NARINDER DHRUV BATRA
PRÄSIDENT

Datum des Zertifikats: 24/03/2021 Das Feld ist zertifiziert bis: 18/08/2023

Anmerkungen:

1 *Das Spielfeld wurde gemäß den FIH Hockey Turf & Field Standards – Part 2 (Ausgabe 2021) getestet.*

2 *Eine nicht ordnungsgemäße Wartung des Feldes kann zu einer Verschlechterung der Leistung und Sicherheit des Feldes führen.*

3 *FIH behält sich das Recht vor, das Feld jederzeit erneut zu testen, um die fortlaufende Einhaltung der Standards zu überprüfen.*

ZERTIFIKAT N° CF-21-35

FIH International Hockey Federation
Fédération Internationale de Hockey

11 A-SIDE HOCKEY FIELD
FIH QUALITY
CATEGORY 2

FIH field certification

Hockey Stadium Olympiapark Berlin, Berlin, Germany

The FIH is pleased to confirm that this hockey field has been tested and shown to satisfy the construction, performance, and player welfare requirements of an FIH Category 2 hockey field.

Hockey turf	*Domo Ultimate Pro EL15*
Manufactured by FIH Preferred Supplier	*Sports & Leisure Group N.V – Domo Sports Grass*

DR. NARINDER DHRUV BATRA
PRESIDENT

Date of Certificate: 24/03/2021

The field is certified until: 18/08/2023

Notes:

1 The field was tested in accordance with FIH Hockey Turf & Field Standards – Part 2 (2021 edition).

2 Failure to maintain the field correctly may result in a deterioration in the performance and safety of the field.

3 FIH reserves the right to retest the field at any time, to verify ongoing compliance with its standards.

ENGINEERED FOR HOCKEY

FIELD TEST REPORT

Field name / designation	Hockey Stadium Olympiapark Berlin	
City	Berlin	
Country	Germany	
Category of field	2	FIH Global hockey turf
Type of test	Initial field certification	

1 Introduction

A hockey field is a major investment, so it is very important that it meets the expectations of players, funders, site operators, and those organising matches to be played on it. To ensure good quality fields are built, the FIH has developed its *Hockey Turf and Field Standards* (HTFS). These define the qualities required from the playing surface and the layout and construction criteria of 11 a-side hockey fields.

The HTFS describes five categories of hockey fields, based on the various levels of play and use that takes place, from elite level competitions to grassroots development and community play. The field detailed in this report has been tested as a Category 2 field. This category of field is typically used for higher level national and international matches.

This report details the results of the field test recently undertaken. The field test included measurements of the sports performance and player welfare properties of the playing surface and an assessment of the field's irrigation system. A comprehensive series of quality control checks were also undertaken to verify that the installed hockey turf surface is the same as the product previously approved by the FIH, ensuring manufacturing mistakes have not occurred.

The tests were undertaken by a FIH accredited test institute. The results obtained are detailed on the following pages. Results highlighted in green show compliance with the requirements of the HTFS. Results highlighted in pink indicate non-compliance. When non-compliance is noted, further details are provided at the rear of this report. Results not highlighted are provided for information only.

On the basis of this report, the FIH will assess the suitability of the field for FIH Field Certification. If the field is found to comply with the FIH requirements, a certificate of compliance will be issued, and the field will be listed on the FIH website.

Fields less than 12 months old at the time of the initial field test are certified for 3 years from the date of the field test. Fields older than 12 months are certified for 2 years.

Over time and through use, the performance, condition and suitability of the field to host hockey matches will change. It is therefore important that the field is re-checked periodically. This allows the site operator to demonstrate that the field is continuing to provide a safe and suitable playing environment; re-checking is good practice and a simple way for the site operator to demonstrate they are continuing to meet their obligations to provide a facility that is fit for purpose. The FIH recommends, and some National Hockey Associations require, fields to be re-tested at the end of each certification period.

Please think about the environment before printing this report. If you do require a paper copy, please set your printer to print on both sides of the paper.

2 Field details

Location	Road	Berlin,
	City	Berlin
	State/Province/County	Berlin
	Country	Germany
	Post/Zip code	14053
Field owner's contact details	Name	Petra Freyni
	Position	
	Email	Petra.Freyni@SenInnDS.berlin.de
Date of construction (handover month & year)		06/2020
Installed hockey turf (product name)		Domo Ultimate Pro EL15
Manufacturer (FIH licensee)		Sports & Leisure Group N.V. – Domo Sports Grass
Hockey turf approval category (as shown on FIH certificate)		Global
Hockey turf certificate number (as shown on FIH certificate)		2020–042
Field builder's name (only required if the field was built by an FIH Preferred Supplier or FIH Certified Field Builder)		

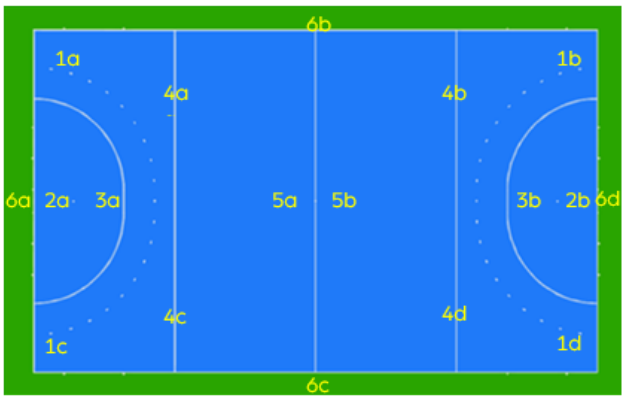
3 Test institute details

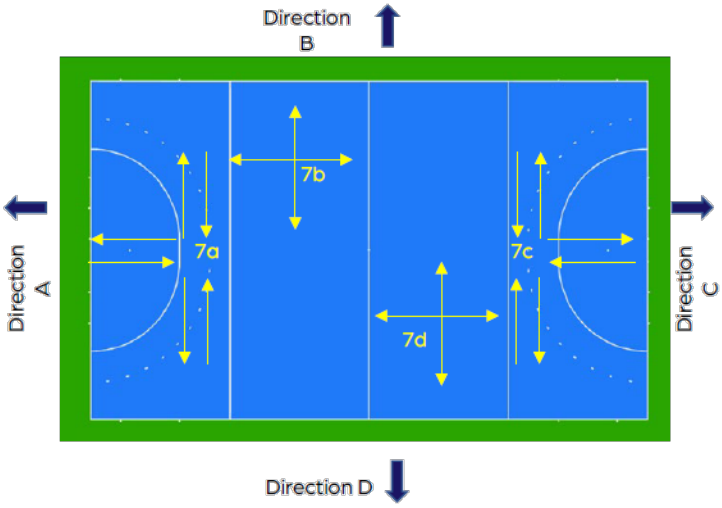
Test Institute	Labor Lehmacher | Schneider GmbH
FIH Accredited Field Test Engineer(s)	Matthias Schucht M.A.
Other participating field test engineers	Dr. Jens Bußmann
Test institute project / report reference	K3698

4 Test details

Date of test		18/06/2020					
Field conditions at time of test		Irrigated	☒	Wet (rain)	☐		
Air temperature (°C)		Min.	29,8	Max.	30,1		
Surface temperature (°C)		Min.	26,1	Max.	28,2		
Wind speed (m/s)	ball roll tests	Min.	0.0	Max.	0.7		
	irrigation tests	Min.	0.3	Max.	0.8		

Test positions – spot tests, ball roll & ball roll deviation





1a	☐	1b	☐	1c	☐	1d	☒
2a	☐	2b	☒	2c	☐	2d	☐
3a	☒	3b	☐	3c	☐	3d	☐
4a	☒	4b	☐	4c	☐	4d	☐
5a	☐	5b	☒	5c	☐	5d	☐
6a	☒	6b	☐	6c	☐	6d	☐
7a	☒	7b	☒	7c	☒	7d	☒

Field orientation

5 Sports performance

5.1 Ball rebound

Hockey balls should not bounce too high or too low; the bounce also needs to be consistent. These aspects of a field's performance are assessed by measuring the height a hockey ball rebounds when dropped vertically from a height of 2.0 m. Tests are made in a number of locations on the field. For a field to comply, the rebound in each test position must be within the specified range, and the rebound properties must be consistent across the field.

Results (mm)						
TP1	TP2	TP3	TP4	TP5	TP6	Overall mean
324	314	326	326	338	317	326

Requirements:	100 mm – 400 mm	Compliant:	Yes	☒
			No	☐

Ball rebound consistency (% difference to overall mean)						
TP1	TP2	TP3	TP4	TP5	TP6	Overall mean
–0.42	–3.49	+0.07	+0.14	+3.70	–2.81	±1,77

Requirements:	≤ ± 10%	Compliant:	Yes	☒
			No	☐

5.2 Ball roll

Ball roll assesses the speed of the surface. It is measured by rolling a hockey ball down a ramp and measuring the distance it travels and the degree to which it deviates from a straight line. Tests are made in a number of locations on the field and in different directions. To satisfy the FIH requirements the ball roll must exceed the minimum ball roll distance, be consistent irrespective of direction and not excessively deviate from a straight line.

Results (m)						
TP	Direction of test					
	A	B1	B2	C	D1	D2
7a	15.61	16.71	13.36	13.66	13.10	16.77
7b	13.52	17.00		15.33	12.72	
7c	12.61	16.53	16.35	15.83	14.29	12.89
7d	13.30	13.53		14.27	16.44	
			Overall mean	14.69		

Requirements:	≥ 10.0 m	Compliant:	Yes	☒
			No	☐

Ball roll consistency (% difference to overall mean)						
7a	+6.28	+13.77	−9.06	−6.99	−10.85	+14.15
7b	−7.97	+2.00		+4.37	−13.42	
7c	−14.19	+12.52	+11.29	+7.73	−2.71	−12.28
7d	−9.49	−7.92		−2.86	+11.91	

Requirements:	≤ ±10%	Compliant:	Yes	☐
			No	☐

If an existing field that exceeds the FIH Preferred Gradients and is being resurfaced or converted to a Category 2 field tick the adjacent box	☒

Requirements:	≤ ±15%	Compliant:	Yes	☒
			No	☐

5.3 Ball roll deviation

Field test results (m)						
TP	Direction of test					
	A	B1	B2	C	D1	D2
7a	0.17	0.17	0.15	0.17	0.10	0.03
7b	0.31	0.08		0.15	0.07	
7c	0.03	0.04	0.08	0.05	0.11	0.12
7d	0.12	0.10		0.13	0.08	

Requirements:	≤ 0.50 m @ 9.5 m	Compliant:	Yes	☒
			No	☐

5.4 Shock Absorption

Shock absorption assesses the cushioning provided to players as they run and fall on the surface. The impact force experienced during the test is measured and compared to the value measured on concrete; the result being expressed as a percentage reduction. The higher the result the greater the shock absorption. A minimum value is specified to ensure fields are not too hard and an upper limit is specified to ensure fields are not too soft or tiring.

Results (% Force Reduction)						
TP1	TP2	TP3	TP4	TP5	TP6	Overall mean
54.80	55.80	55.05	55.55	54.45	56.30	55.33

Requirements:	45% – 60%	Compliant:	Yes	☒
			No	☐

Shock absorption consistency (difference to overall mean)						
-0.52	+0.48	-0.27	+0.23	-0.87	+0.98	±0.56

Requirements:	≤ ± 5	Compliant:	Yes	☒
			No	☐

5.5 Vertical Deformation

The degree to which a playing surface compresses when a player runs on it is also an important characteristic. Surfaces should allow some deformation to ensure injuries do not occur through the jarring of a player's foot, but it is also important that the deformation is not too high, or players will find the surface unstable.

Field test results (mm)						
TP1	TP2	TP3	TP4	TP5	TP6	Overall mean
7.00	7.20	6.70	7.30	7.30	7.15	7.11

Requirements:	4 mm – 9 mm	Compliant:	Yes	☒
			No	☐

5.6 Shoe/Surface Interaction (Nm)

Shoe/surface interaction is assessed by measuring the resistance the surface offers to a loaded test plate designed to simulate a hockey shoe rotating on the surface. If the level of resistance is too low players will find the surface slippery. If the level is too high players may suffer injuries due to excessive foot grip.

Results (Nm)						
TP1	TP2	TP3	TP4	TP5	TP6	Overall mean
40.92	39.68	41.90	41.24	41.62	41.70	41.18

Requirements:	25 Nm – 45 Nm	Compliant:	Yes	☒
			No	☐

Shoe/surface Interaction consistency (variation to overall mean Nm)						
+0.26	+1.50	-.072	-0.06	-0.44	-0.52	±0.58

Requirements:	≤± 5 Nm	Compliant:	Yes	☒
			No	☐

5.7 Surface regularity

It is important that there are no depressions or high spots that could distort the trajectory of a ball rolling across the surface or cause it to lift. The whole field is surveyed using a 3 m straightedge and any undulations greater than 6 mm recorded. Any sudden steps (raised edges on carpet or shockpad joints, etc.) are also checked using a 0.3 m straightedge.

Excessive undulations or high spots				
	Maximum limit	Number of excessive undulations recorded	Compliant	
3 m straightedge	6 mm	0	Yes	☒
			No	☐
0.3 m straightedge	3 mm	0	Yes	☒
			No	☐
If undulations or high spots are found their position and magnitude are indicated on the drawing at the rear of this report.				

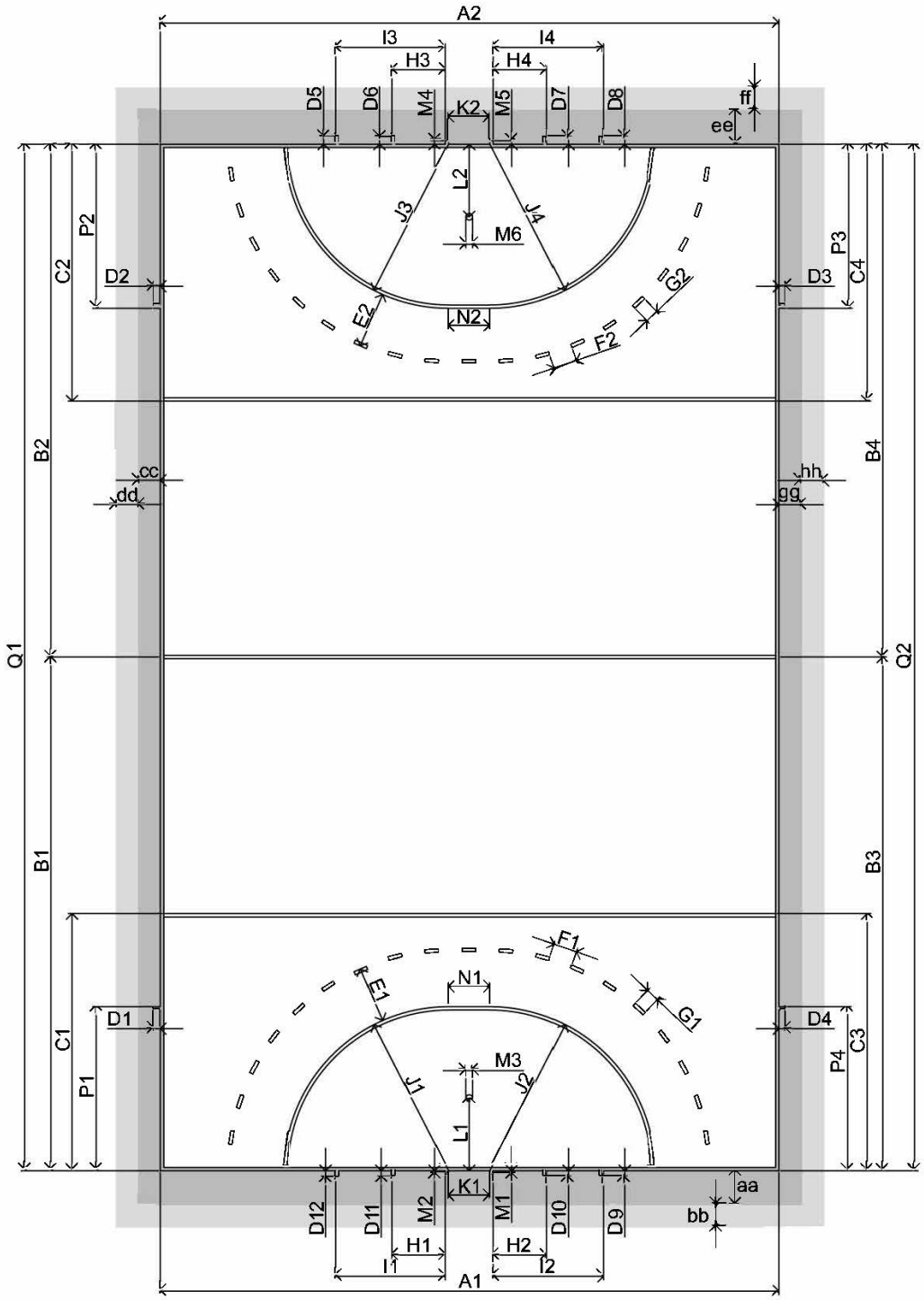
6 Field dimensions

The field of play shall measure 91.40 m x 55.00 m. End run-offs must be at least 3.0m wide, and side run-offs must be at least 2.0m wide. The inner run-offs must be surfaced with the same hockey turf as the field of play.

Field measurements (m)						Compliant	
Field of play	Length		Width			Yes	No
	91.40		55.00			☒	☐
Field of play diagonals (m)		1	106.66	2	106.71		
Difference between diagonals (mm)		5	Requirement ≤ 300 mm			☒	☐
Run-offs (m)							
	Inner run-off		Outer run-off		Total width	Compliant	
	Surface	Width	Surface	Width		Yes	No
End 1	Artificial Turf	4.10	Paved surface	0.72	4.82	☒	☐
End 2	Artificial Turf	4.10	Paved surface	0.72	4.82	☒	☐
Side 1	Artificial Turf	1.70	Paved surface	1.30	3.0.	☒	☐
Side 2	Artificial Turf	1.70	Paved surface	1.30	3.00	☒	☐

7 Hockey line markings

Line markings are checked to ensure compliance with the Rules of Hockey and the HTFS.



Line width	A1	75	A2	75	Q1	75	Q2	75	75 ± 10 mm	☐	☐

Distance (m)	Tolerance	Ref.	Actual (m)	Error	Compliant		Ref.	Actual (m)	Error	Compliant	
55.00	± 50 mm	A1	54.98	0.02	☒	☐	A2	55.01	0.01	☒	☐
45.70	± 50 mm	B1	45.70	0.0	☒	☐	B2	45.68	0.02	☒	☐
		B3	45.695	0.05	☒	☐	B4	45.69	0.01	☒	☐
22.90	± 50 mm	C1	22.90	0.00	☐	☐	C2	22.89	0.01	☒	☐
		C3	22.89	0.01	☒	☐	C4	22.90	0.00	☒	☐
0.30	± 30 mm	D1	0.30	0.00	☒	☐	D2	0.30	0.00	☒	☐
		D3	0.30	0.00	☒	☐	D4	0.30	0.00	☒	☐
		D5	0.30	0.00	☒	☐	D6	0.30	0.00	☒	☐
		D7	0.30	0.00	☒	☐	D8	0.30	0.00	☒	☐
		D9	0.30	0.00	☒	☐	D10	0.30	0.00	☒	☐
		D11	0.30	0.00	☒	☐	D12	0.30	0.00	☒	☐
5.00	± 30 mm	E1	5.01	0.01	☒	☐	E2	4.98	0.02	☒	☐
3.00	± 50 mm	F1	2.98	0.02	☒	☐	F2	2.99	0.01	☒	☐
0.30	± 30 mm	G1	0.30	0.00	☒	☐	G2	0.30	0.30	☒	☐
4.975	± 50 mm	H1	4.975	0.00	☒	☐	H2	4.980	0.01	☒	☐
		H3	4.975	0.00	☒	☐	H4	4.975	0.00	☒	☐
9.975	± 50 mm	I1	9.975	0.00	☒	☐	I2	9.975	0.00	☒	☐
		I3	9.975	0.00	☒	☐	I4	9.975	0.00	☒	☐
14.63	± 30 mm	J1	14.63	0.00	☒	☐	J2	14.62	0.01	☒	☐
14.63	± 30 mm	J3	14.62	0.01	☒	☐	J4	14.62	0.01	☒	☐
3.66	± 50 mm	K1	3.66	0.00	☒	☐	K2	3.66	0.00	☒	☐
6.475	± 30 mm	L1	6.475	0.00	☒	☐	L2	6.475	0.00	☒	☐
0.15	± 30 mm	M1	0.15	0.00	☒	☐	M2	0.15	0.00	☒	☐
		M4	0.15	0.00	☒	☐	M5	0.15	0.00	☒	☐
Ø 0.15	± 30 mm	M3	0.15	0.00	☒	☐	M6	0.15	0.00	☒	☐
3.66	± 50 mm	N1	3.66	0.00	☒	☐	N2	3.66	0.00	☒	☐
14.63	± 50 mm	P1	14.63	0.00	☒	☐	P2	14.63	0.00	☒	☐
14.63	± 50 mm	P3	14.63	0.00	☒	☐	P4	14.63	0.00	☒	☐
91.40	± 50 mm	Q1	91.38	0.02	☒	☐	Q2	91.37	0.03	☒	☐

8 Playing surface

			Yes	No
Is the installed hockey turf an FIH Global certified product?			☐	☐
Is the field of play?	an approved shade of blue (RAL, 5002, 5005, 5010, 5017, 5019)	☐	☒	☐
	green	☒		
What are the colours of the perimeter run-offs?	Red			
Are the yarn colours used, detailed in the approved product test report?	Field of Play (FoP)		☒	☐
	Run-offs		☐	☒
	Lines		☒	☐
Does the field have 5m dashed circle markings?			☒	☐
Does the field have cross pitch hockey markings?			☐	☒
Does the field have markings for any other sports?			☐	☒
Does the field have any logos within the:	FoP?		☐	☒
	Run-offs?		☐	☒
Play surface quality and installation	Is the installed hockey turf free from manufacturing and visual defects?		☒	☐
	Are there any carpet rucks, wrinkles, or any other installation defects within the FOP or run-offs?		☐	☒
	Are there any excessively open or failed carpet joints?		☐	☒
	Are the any joints that may cause a ball to lift or deviate as it passes over the joint?		☐	☒
	Are there any other manufacturing or installation defects that mean in your opinion the field should not be certified?		☐	☒
	Is the surface laid in full width rolls running across the FOP without head seams?		☒	☐

			Yes	No
	Is the hockey turf	bonded to the shockpad?	☐	☐
		tensioned and clamped along the boundaries?	☒	
Play surface quality and installation	Are there any repairs to the playing surface?		☐	☒
	If there are any repairs, have they been undertaken in a satisfactory way, so they do not compromise the performance or appearance of the field?	N/A ☒	☐	☐
	If there are any defects or repairs, has the field owner confirmed in writing they are still willing to accept the field?		☐	☒

9 General field requirements

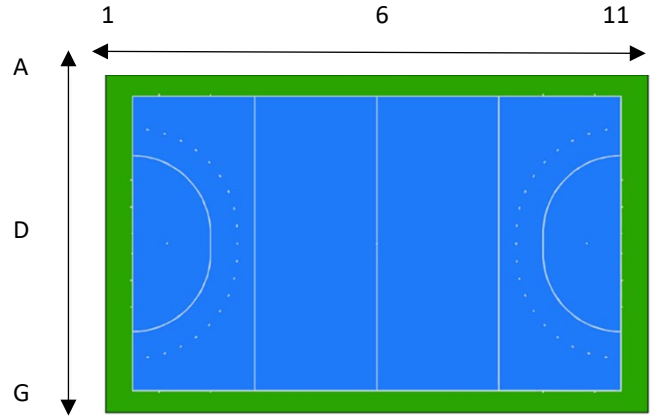
Orientation	Is the field aligned North /South (± 15°)	☒	☐
FoP drainage	During the irrigation test was water found to be standing on the hockey turf?	☐	☒
Perimeter fencing	Does the fencing ensure balls cannot pass through it and leave the field?	☒	☐
	Is the fencing in an acceptable condition and not pose a risk to anyone colliding with it?	☒	☐
	Is there emergency vehicle access onto the field?	☒	☐
Field equipment	Is the field equipped with hockey goals and nets?	☒	☐
	Are the goals FIH Approved?	☐	☒
	Are the goals in good condition and suitable for use on an FIH certified field?	☒	☐
Maintenance equipment	Is the field equipped with the necessary maintenance equipment, recommended by the hockey turf manufacturer?	☒	☐
Are there any other features that you consider may have an adverse effect on the playing qualities of the field or could be a possible hazard to players, officials or spectators using the facility?		☐	☒

10 Field profile and gradients

The profile and gradients of the field should comply with Clause 4.2 of the HTFS.

<table>
<tr><td colspan="3">Field measurements</td></tr>
<tr><td>Indicative drawing showing profile of the field</td><td colspan="2"> </td></tr>
<tr><td>Longitudinal gradient along length of the field</td><td>Lateral gradient across width of the field</td><td>Maximum gradient in any direction on the field</td></tr>
<tr><td>0.3</td><td>0.9</td><td>0.9</td></tr>
</table>

11 Field Irrigation



Test grid

Results (mm or 1/m²)

	A	B	C	D	E	F	G
1	1578	1368	1368	1157	1263	1052	2105
2	1684	1473	1368	1263	1052	1052	1052
3	2105	2105	1578	842	1263	1052	1578
4	1473	737	842	421	737	1473	842
5	0737	631	526	842	526	947	526
6	0737	526	631	631	631	631	526
7	0842	631	947	631	631	842	737
8	1263	1263	737	631	1157	1684	947
9	0152	1052	842	1263	1999	1052	526
10	1157	631	1263	842	1578	1263	631
11	1157	1263	737	421	789	1263	1263

Irrigation requirement for installed hockey turf – as detailed in product approval test report (l/m²)			1.0
Irrigation time cycle (min)	10	Average depth of water collected during test	1.04 l/m²

	Yes	No
Is the average depth of water ≥ 100% of the irrigation requirements of the hockey turf?	☒	☐
Is the depth collected in any one test postion greater than 100%, or less than 50% of an adjacent position? If yes detail which at the end of this report.	☐	☒
Was the irrigation cycle completed in 10 minutes or less?	☒	☐

12 Hockey turf quality assurance tests

To verify that the hockey turf installed on the field is the same as the FIH Approved Product, and manufacturer's declaration, representative samples have been checked.

	Characteristic	Manufacturer's declaration	Site sample	Permitted tolerance	Compliant	
					Yes	No
Hockey turf carpet	Method of manufacture	Tufted	Tufted		☒	☐
	Pile type	Monofilament Textile fibre	Monofilament Textile fibre	Same type	☒	☐
	Pile profile	Ellipse	Ellipse	Same profile	☒	☐
	Pile height (mm)	10	10.0	± 10%	☒	☐
	Pile weight (g/m^2)	1,850	1,805	± 10%	☒	☐
	Pile dtex	8,600	8,300	± 10%	☒	☐
	Pile thickness (mm)	160 90	162 84	≥ 90%	☒	☐
	Yarn polymer (DSC)	PE	PE	Same polymer	☒	☐
	Tufts/m ^{2}	71,400	72,479	± 10%	☒	☐
	Filaments/m^2	5,807,200	5,798,320	± 10%	☒	☐
	Carpet mass g/m^2	3,400	3,072	± 10%	☐	☒
	Water permeability (mm/h)	>500	780	≥ 90%	☒	☐
Shockpad	Composition [1]	Samples not available for assessment			☐	☐
	Manufacturer [1]				☐	☐
	Thickness [1] (mm)			90% – 130%	☐	☐
	Mass/m^2			± 10%	☐	☐
	Shock absorption [2] (%FR)			± 5% SA	☐	☐
	Water permeability (mm/h)			≥ 90%	☐	☐

Notes:

1 – not applicable if an existing shockpad is retained when a field is being re-surfaced.

2 – applicable to new fields or when a new shockpad is laid on an existing field during re-surfacing.

13 Plan showing location of any defects, failures, or items of concern

14 FIH comments

This field has been tested to assess its suitability for use in the FIH Pro League. As the field test was undertaken a number of years after the installation of the hockey turf, site samples of the shockpad, etc were not available. Therefore the FIH is unable to comment on the suitability of the installed shockpad, especially with respect to its longer term durability.

15 Test institute declaration

We certify that the tests described in this report have been carried out in accordance with the latest requirements of the *FIH Hockey Turf and Field Standards* and this report accurately reflects the outcomes.

We further certify that in our opinion there were no defects that compromise the quality, performance, player safety, or durability of the field at the time it was tested.

Report prepared by			
		Name	Matthias Schucht
Report authorised by			
		Name	Oliver Schneider
Date	18/03/2021		

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