

UPMINSTER SC

NLR IECC C (3)

**EXTERNAL COMMUNICATIONS SUBSYSTEM
SPECIFICATION**

A01UPM/NLR/ECS/001

VERSION NP2

Controlled Copy No.

ISSUE and AMENDMENT RECORD

Version	Produced	Checked	Date	Details of change
HV1	■	■	12/07/10	Initial issue of document.
HV2	■	■	07/09/10	Amendment to Channelsea Curve heading in section 9.3, and removal of berths Z258 and Z269 throughout document. Amendment to drawing number, as agreed with NRG. Replacement of curved bracket with curly bracket in section 9.3.
HX1	■	■	09/09/10	Updates in line with NLRIP Angel Lane Stage 4 (addition of Temple Mills fringe). Inclusion of additional S-Class information being sent to Stratford IECC B for ARS purposes (section 9.4).
HX2	■	■	17/11/10	Propagation of NLR Stage 1&2 HV3 update into Angel Lane Stage 4 (changes only made where appropriate). Details of update: Specification updated to comments made at the IDC (06.10.2010), Test Logs (NLR/TL/056, 088 and 091), DRN (WP02-ATK-DRN-SG-001459), TQs (SCS-NLR(MWC)-TQ-091 and 092) and comments from set-to-work testing.
HY1	■	■	19/11/10	NLRIP Stage 3 (Angel Lane Stage 5): -New berth Z292 received from Stratford IECC. -Berth 1286 sent to Stratford IECC.
HY2	■	■	25/01/11	Propagation of Angel Lane Stage 4 HX3 (updates in line with set-to-work testing), HX4 (Stage 1&2 modifications NLR/ST1&2/MOD/003 and NLR/ST1&2/MOD/011) and HX4 modification NLR/AL4/MOD/003. Specific changes include amendments to the signalling items being sent to Stratford IECC B(2) ECS; removal of meshing for signalling items from Kings Cross and Gospel Oak; removal of FTN headers on SMART Link 1; change of Wembley Mainline initialisation type from TD to RECALL; inclusion of berth H704 into section 9.3 (to be transmitted to Stratford IECC B ECS).
HZ1	■	■	24/01/11	NLRIP Stage 4 alterations: - Removal of Gospel Oak fringe. - Addition of following fringes: <ul style="list-style-type: none"> o Wembley Main Line (Clapham Junction) o Wembley Main Line (Harlesden Junction) o Willesden Suburban (Harlesden / Willesden Low Level) o Acton Wells o Upper Holloway

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HZ2			07/02/11	NLRIP Stage 4 modifications: <ul style="list-style-type: none"> - Modification of initialisation types for links to Wembley Mainline TD and Upper Holloway TD. - Addition of routes R270CM, R276CM and R278CM in S-Class received from Stratford, in line with modifications to Stratford during NLRIP Stage 3 (Angel Lane Stage 5). - Addition of berths SLT1 and SLTA to DIS 2, to provide DRW alarm for advance slot request from Stratford.
HZ3			05/04/11	Updated to modification sheets NLR/S4/MOD/004 and NLR/S4/MOD/011.
MU1			25/05/11	Altered for the Lea Valley On Network Project: <ul style="list-style-type: none"> - Removal of entries throughout specification for recovered signal S698.
MW1		(alteration design)	26/10/11	Altered for the Lea Valley On Network Project (stage NLRIP Residual Works – Upminster): <ul style="list-style-type: none"> - Removal of route R1401BC, track TCBX, berth C301.
		(record update)	03/05/12	<ul style="list-style-type: none"> - Addition of routes R1112BM, R1112BW, R1112CM. - New link created with CTRL TD. - New berths added for DRWs between DIS1 and DIS2.
NP1			03/05/12	Altered for NLRIP Residual Works Stage 5.2 (per CTRL fringe design co-ordination meeting with Ansaldo on 5/3/12): berths 1013 and 1208 no longer to be sent to CTRL.
NP2	(alteration design)		25/06/12	Altered for NLRIP Residual Works Stage 5.2 (Bollo Lane and Kew East signalling works): <ul style="list-style-type: none"> - Replacement of link to Acton Wells TD with FTN-enabled link to Acton Wells MCS.
	(record update)		05/03/13	<ul style="list-style-type: none"> - Renaming of berths B101, B102 and B104 to A101, A102 and A104 respectively.

DELTARAIL GROUP LTD	Name	Signature	Date
Produced			05/03/2013
Checked			05/03/2013

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Print name	Signature	Date

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1 INTRODUCTION

1.1 Document Overview

This document defines the External Communications Subsystem (ECS) data requirements for the North London Railway (NLR) Integrated Electronic Control Centre (IECC) C (3) located at Upminster Signalling Centre (SC).

The following information is supplied for each ECS link:

- Link Characteristics
- Train Descriptor (TD) berths transmitted and received
- Signalling items transmitted and received (where appropriate)
- Subsystems which will be informed of changes in remote link status.

1.2 ABBREVIATIONS

ECS	External Communication Subsystem
DIS	Flexible Display Subsystem
IDPM	IECC Data Preparation Manual
IECC	Integrated Electronic Control Centre
SC	Signalling Centre
SMART	Signal Monitoring and Reporting of Trains
TD	Train Descriptor
NLR	North London Railway

1.3 Related Documents

IECC Application Manuals

NR/SP/SIG/10040 Issue 8

IDPM 1302 External Communications

SAO-IEC-HD-56 Issue 3

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2 ECS OVERVIEW

2.1 All berths known to IECC

2.1.1 DIS1

1001	1002	1052	1111	1112	1113	1117	1119
1200	1202	1204	1205	1206	1208	1210	1212
1213	1214	1216	1217	1218	1219	1220	1221
1225	1226	1227	1228	1229	1233	1234	1235
1237	1311	K263	W801	AP76	AP80	KXF8	DNLA
APNI	RD76	RD80	RKXI	SSNI	SSPH	LSNI	LSPH
1000	1003	1004	1005	1006	1007	1008	1010
1011	1012	1013	1014	1015	1016	1017	1018
1019	1020	1021	1022	1023	1024	1025	1026
1027	1028	1029	1030	1031	1032	1033	1034
1035	1036	1037	1038	1039	1040	1042	1043
1044	1045	1046	1047	1048	1049	1050	1064
1302	1303	1304	1306	A010	A012	A041	A043
A047	A147	A301	AP46	AP48	AP81	APP1	APP2
APUH	B041	A101	B301	C041		DCLA	DNHL
DNWA	F041	F301	LSAC	LSCJ	LSHJ	LSUH	LSWL
P301	R041	R301	R675	RCHL	RD46	RD48	RD81
RDP1	RDP2	RDUH	SDAC	SDCJ	SDHJ	SDUH	SDWL
UCHL	W620	W672	W675	WS23	X675	Y675	026C
041C	APU1	APU2	CAPP	CTFA	LSCT	LSSP	RCTF
RDU1	RDU2	RSPF	SAPP	SPFA	SSCT	SSSP	

/Additional berths for Wembley Mainline (Primrose Hill) Fringe

W314	W706	W800	W902
------	------	------	------

/Additional berths for Wembley Mainline (Clapham Junction) Fringe

V809	V811	V813	V815	W811
------	------	------	------	------

/Additional berths for Wembley Mainline (Harlesden Junction) Fringe

W334	W754	W756	W758
------	------	------	------

/Additional berths for Harlesden (Willesden Low Level) Fringe

WS03	WS18	WS22	WS24	WS26	WS28
------	------	------	------	------	------

/Additional berths for North London Incline Fringe

K300	K310	K320	K322
------	------	------	------

/Additional berths for Acton Wells Fringe

A146	A148	A102	A104	SN82	SN84
------	------	------	------	------	------

/Additional berths for Upper Holloway Fringe

ST04	U061	U063
------	------	------

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2.1.2 DIS 2

1238	1239	1242	1243	1244	1245	1246	1247
1250	1251	1253	1254	1256	1257	1258	1260
1261	1262	1264	1265	1268	1269	1270	1271
1272	1273	1274	1275	1276	1277	1278	1279
1280	1281	1282	1283	1284	1285	1286	1287
1288	1289	1290	1292	1294	1296	1315	1317
1401	A402	B402	F402	R402	1403	A404	B404
F404	R404	1406	1420	1421	1422	1423	1424
K375	L136	S258	S269	S703	APKC	AP71	APGR
AUCC	ADCR	APCN	APGC	CCAP	CRAP	RDKC	DR71
RDGR	RDCC	RDGR	SSGR	SSCC	SSCR	SSCK	LSGR
LSCC	LSCR	LSCK	SSHM	LSHM	AUHM	RUHM	ADHM
SLT1	SLTA	APD1	APD2	APD3	RDD1	RDD2	RDD3

/Additional berths for Canonbury Curve Fringe

K372	K376	K377	K378	K380	K384	K386	
------	------	------	------	------	------	------	--

/Additional berths for Graham Road Curve Fringe

L091	L101	L121	L125	L129	L132	L135	L271
Z268							

/Additional berths for Channelsea, Carpenters Road Curve and Temple Mills West Fringes

S237	S239	S241	S249	S251	S270	S274	S276
S278	S290	S292		S700	Z294	Z296	S704
S706	S708	S712	Z424	H704	Z292		

2.2 Berths from Wembley Mainline TD

The following berths belong to TD Map Area: *WBML*

/Primrose Hill

1202	W314	W706	W800	W801	W902	AP80	AP76
------	------	------	------	------	------	------	------

/City Line (Harlesden Junction fringe)

1038	UCLH	W334	W672	W675	W754	W756	W758
------	------	------	------	------	------	------	------

/High Level (Clapham Junction fringe)

1048	AP81	DNHL	V809	V811	V813	V815	W620
W811							

2.3 Berths from Willesden Suburban TD

The following berths belong to TD Map Area: *WDSL*

1044	APP1	APP2	DNWA	WS03	WS18	WS22	WS23
WS24	WS26	WS28					

2.4 Berths from Kings Cross TD

The following berths belong to TD Map Area: *KXTD*

/North London Incline

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1113	K263	K300	K310	K320	K322	KXFA	APNI
<i>/Canonbury Curve</i>							
1243 K386	K372 APKC	K375 APCN	K376	K377	K378	K380	K384

2.5 Berths from Liverpool St IECC A (1) TD

The following berths belong to TD Map Area: *LVSB*

Z268 L136	L091 L271	L101 AP71	L121 APGR	L125	L129	L132	L135
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2.6 Berths from Stratford IECC B (2) TD

The following berths belong to TD Map Area: *STFD*

/Temple Mills

Z424	S703	S704	S706	S708	S712	AUHM	H704
------	------	------	------	------	------	------	------

/Carpenters Road

Z296	S237	S239	S241	S249	S251	S258	ADCR
------	------	------	------	------	------	------	------

/Channelsea Curve

Z294	S269 S700	S270 AUCC	S274 Z292	S276	S278	S290	S292
------	--------------	--------------	--------------	------	------	------	------

2.7 Berths from Acton Wells MCS

The following berths belong to TD Map Area: *ANWJ*

1050 A104	A146 SN82	A147 SN84	A148	AP46	AP48	A101	A102
--------------	--------------	--------------	------	------	------	------	------

2.8 Berths from Upper Holloway TD

The following berths belong to TD Map Area: *UHTD*

1064	1306	APUH	ST04	U061	U063
------	------	------	------	------	------

2.9 Berths from CTRL TD

The following berths belong to TD Map Area: *CTRL*

026C	041C	1117	1119	CTFA	SPFA
------	------	------	------	------	------

2.10 Early Transmission and ARS Strike-in Berths

These are remote berths on routes entering the IECC area whose contents the ARS needs for route planning. All berths from the first nominated berth (the FROM berth of steps to the ARS TD initialisation berth) up to, but not including, the first IECC berth are considered to be on the ARS strike-in path within ECS are called “ETBFOR” due to ECS code fault.

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2.10.1 ARS Strike-In Berths

Included within the Early Transmission Berths.

2.10.2 Early Transmission Berths - DIS1

1113	1202	K263	W706	W800	W801	AP76	AP80
KXFA	APNI						
1038	1044	1048	1050	1064	1306	A146	A147
A148	AP46	AP48	AP81	APP1	APP2	APUH	A101
A102	A104	DNHL	DNWA	SN82	SN84	ST04	U061
U063	UCHL	V809	V813	W620	W672	W675	W811
WS23	026C	041C	1117	1119	CTFA	SPFA	

2.10.3 Early Transmission Berths - DIS2

1243	Z268	Z294	Z296	K375	L132	L136	S258
S269	APKC	K377	APGR	AP71	ADCR	AUCC	AUHM
S703	H704	Z424	APCN	Z292			

2.11 Identities

2.11.1 Wembley Mainline Identities

The following identities belong to TD Area: *WBML*

Indications for the following inputs are to be displayed on TDmap: WMCR.

R706M R800M SWM706 SWM800 SWM902 SWM314

Indications for the following inputs are to be displayed on TDmap: HARL.

R672M SWM334 SWM672 SWM754 SWM756 SWM758

2.11.2 Willesden Suburban Identities

The following identities belong to TD Area: *WDSL*

Indications for the following inputs are to be displayed on TDmap: WLOW.

R18AM R22AM SWS18 SWS22 SWS24

2.11.3 Kings Cross Identities

The following identities belong to TD Area: *KXTD*

Indications for the following inputs are to be displayed on TDmap: NICS.

S300* S310A* S310B* S320A* S320B* S322A* S322B* LP2037Rⁿ
LP2039Nⁿ

ⁿ Identity received, but not in use by the IECC.

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* The list below determines how each of the inputs should be displayed on TDmap NICS:

Indication	Input
SKX300	: S300
SKX310	: S310A or S310B
SKX320	: S320A or S320B
SKX322	: S322A or S322B

Note: where there is more than one input listed against the indication, the receipt of either input will cause the named indication to display (these inputs are mutually exclusive and cannot therefore happen together).

Indications for the following inputs are to be displayed on TDmap: CNBY.

S372*	S376*	S378*	S380*	S384A*	S384B*	S384C*	S386A*
S386B*							

* The list below determines how each of the inputs should be displayed on TDmap CNBY:

Indication	Input
SKX372	: S372
SKX376	: S376
SKX378	: S378
SKX380	: S380
SKX384	: S384A or S384B or S384C
SKX386	: S386A or S386B

Note: where there is more than one input listed against the indication, the receipt of either input will cause the named indication to display (these inputs are mutually exclusive and cannot therefore happen together).

2.11.4 Liverpool St IECC A (1) Identities

The following identities belong to TD Area: *LVSB*

Indications for the following inputs are to be displayed on TDmap: GMRD.

R135AM	R1271AM	SL91	SL135	SL1271
--------	---------	------	-------	--------

2.11.5 Stratford IECC B (2) Identities

The following identities belong to TD Area: *STFD*

Indications for the following inputs are to be displayed on TDmap: CHCC.

R249AM	R251AM	R270DM	R276DM	R278DM	SS237	SS239	SS241
SS249	SS251	SS270	SS274	SS276	SS278	SS290	SS292
	SS700	R270CM	R276CM	R278CM			

Indications for the following inputs are to be displayed on TDmap: TMLS

R704BM	SS704	SS706	SS708	SS712
--------	-------	-------	-------	-------

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2.11.6 Upper Holloway Identities

The following identities belong to TD Area: UHTD

Indications for the following inputs are to be displayed on TDmap: UHGO.

SUH1061 SUH1063

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3 ECS INTER-UNIT LINK (1)

3.1 Overview

This ECS-ECS remote system link operates from port 1. It is a link to the Master/Standby computer unit with **TD** type initialisation.

3.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	1	Baud Rate	19200
Physical Name	P1	Time-Out Period (secs)	1
Area	ECS1	Message Retry Count	8
Protocol	BR1810	Message Retry Field Flag	Set

3.3 Berths

Changes in the contents of **ALL** berths known to the IECC will be transmitted by the Master ECS computer unit to the Standby ECS computer unit and vice-versa.

3.4 Signalling items

Changes on the status of the following signalling items will be transmitted by the Master ECS unit to the Standby ECS unit and vice-versa.

/ Address 00-0F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R1002	R1052	R1111AM	R1111BM	R1112AM	R1112BM	R1112BW	R1112CM
R1113	R1117	R1119	R1200	R1204	R1205AM	R1205BM	R1206AM
R1206BM	R1208AM	R1208BM	R1210AM	R1210BM	R1212	R1213AM	R1213BM
R1213CM	R1214	R1216AM	R1216BM	R1233	R1234AM	R1234BM	R1235
R1237AM	R1238	R1242	R1243	R1245	R1246	R1250	R1254AM
R1254BM	R1254CM	R1311	R1315AM	R1315BM	R1260	R1261AM	R1261BM
R1261BW	R1265	R1268	R1269	R1270	R1274	R1275AM	R1275BM
R1279	R1280	R1281	R1282	R1283	R1284	R1285AM	R1285AW
R1285BM	R1286	R1287AM	R1287AW	R1287BM	R1288	R1289AM	R1289BM
R1289CM	R1290	R1292AM	R1292BM	R1292CM	R1294AM	R1294BM	R1296
R1401AM	R1401AC	R1401BM	-	R1402	R1403AS	R1403BS	R1404
R1406AM	R1406BM	R1420AM	R1420BM	R1420CM	R1421	R1422AM	R1422BM
R1423	R1424	S1001	S1002	S1052	S1111	S1112	S1113
S1117	S1119	S1200	S1202	S1204	S1205	S1206	S1208
S1210	S1212	S1213	S1214	S1216	S1217	S1218	S1219
S1220	S1221	S1225	S1226	S1227	S1228	S1229	S1233

/ Address 10-1F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S1234	S1235	S1237	S1238	-	S1242	S1243	-

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S1245	S1246	S1247	S1250	S1254	S1311	S1315	S1251
-	S1256	S1257	S1258	S1260	S1261	S1262	S1264
S1265	S1268	S1269	S1270	S1271	S1272	S1273	S1274
S1275	S1276	S1277	S1278	S1279	S1280	S1281	S1282
S1283	S1284	S1317	S1285	S1286	S1287	S1288	S1289
S1290	S1292	S1294	S1296	S1401	S1402	S1403	S1404
S1406	S1420	S1421	S1422	S1423	S1424	L1402TRS	L1404TRS
TAEW	-	T1234	TAFH	TAFJ	TEWA	TFCV	THAC
THAE	TAFI	TFBY	TFBX	TFBW	T172	TG3	TFAD
TFAC	TFAB	TFAA	TCEL	TWAF	TWAG	TWAH	TWKE
TWKF	TWKA	TWKB	TWKC	TWKM	TEBZ	TCDB	T1232
T1233	TEAB	TEAL	TFBP	TFBR	TFBD	TFBE	TFBG
TFBJ	S300	S310A	S310B	S320A	S320B	S322A	S322B
-	-	-	-	R706M	R800M	SWM706	SWM800
SWM902	SWM314	LP2037R*	LP2039N*	S372	S376	S378	-

* Identity received, but not in use by the IECC.

/ Address 20-2F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
-	S380	S384A	S384B	S384C	S386A	S386B	R135AM
R1271AM	SL91	SL135	SL1271	R249AM	R251AM	R270DM	R276DM
R278DM	SS237	SS239	SS241	SS249	SS251	SS270	SS274
SS276	SS278	SS290	SS292	R704BM	SS704	SS706	SS708
SS712	-	SS700	R270CM	R276CM	R278CM	-	-
-	R1000AS	R1000BS	R1008	R1010AM	R1010BM	R1011	R1013
R1016	R1019	R1301	R1302	R1304AS	R1304BS	R1306AM	R1306BM
R1036AS	R1036BM	R1037AM	R1037BM	R1037CM	R1037DC	R1037DM	R1038
R1039AS	R1039BS	R1039CS	R1039DS	R1040AM	R1040BS	R1041AM	R1041BM
R1041CM	R1041DM	R1042AS	R1042BM	R1043	R1044	R1045AS	R1045BS
R1046	R1047AM	R1047BM	R1048	S1000	S1003	S1004	S1005
S1006	S1007	S1008	S1010	S1011	S1012	S1013	S1014
S1015	S1016	S1017	S1018	S1019	S1020	S1021	S1022
S1023	S1024	S1025	S1027	S1301	S1302	S1303	S1304
S1306	S1026	S1028	S1029	S1030	S1031	S1032	S1033
S1034	S1035	S1036	S1037	S1038	S1039	S1040	S1041

/ Address 30-36

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S1042	S1043	S1044	S1045	S1046	S1047	S1048	S1050
L1045TRS	L1301TRS	-	TAET	TAFB	TAFB	TBAA	TBAC
TCBT	TCBW	-	TCBY	THAL	THAM	THAN	T1210
T1240	TADE	TADF	TADH	TADP	TADR	TADS	TADT
TADV	TADY	TAEA	THCK	THCM	THCN	THCP	TNA1
R672M	SWM334	SWM672	SWM754	SWM756	SWM758	R18AM	R22AM
SWS18	SWS22	SWS24	SUH1061	SUH1063	-	-	-

3.5 Link Status

Changes in the status of the remote links will be sent to DIS1 and DIS2.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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4 ECS LINK TO WEMBLEY MAINLINE TD

4.1 Overview

This ECS remote system link operates from port 2. It is a link to Wembley Mainline TD with **TD** type initialisation.

4.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	2	Time-Out Period (secs)	2
Physical Name	P2	Message Retry Count	3
Area	WBML	Message Retry Field Flag	Set
Protocol	BR1810	Incoming Message Header	UPCWML
Baud Rate	1200	Outgoing Message Header	WMLUPC

4.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Wembley Mainline TD:

/Primrose Hill

1202 W801 DNLA 1206 1208

/City Line (Harlesden Junction fringe)

1038 DCLA W675

/High Level (Clapham Junction fringe)

1048 DNHL W620

Changes in the contents of the following berths will be received by ECS from the Wembley Mainline TD:

/Primrose Hill

1202 W314 W706 W800 W801 W902 AP76 AP80

/City Line (Harlesden Junction fringe)

1038 UCHL W334 W672 W675 W754 W756 W758

/High Level (Clapham Junction fringe)

1048 AP81 DNHL V809 V811 V813 V815 W620
W811

4.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by the ECS to Wembley Mainline TD:

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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None

Changes on the status of the following signalling items will be received by the ECS from Wembley Mainline TD (for TD map display purposes):

/Address 00-01

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R706M	R800M	SWM706	SWM800	SWM902	SWM314	-	-
R672M	SWM334	SWM672	SWM754	SWM756	SWM758	-	-

4.5 Link Status

Changes in the status of remote links will be sent to DIS1.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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5 ECS LINK TO WILLESDEN SUBURBAN TD

5.1 Overview

This ECS remote system link operates from port 3. It is a link to Willesden Suburban TD with **TD** type initialisation.

5.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	3	Time-Out Period (secs)	2
Physical Name	P3	Message Retry Count	3
Area	WDSL	Message Retry Field Flag	Set
Protocol	BR1810	Incoming Message Header	UPCWSN
Baud Rate	1200	Outgoing Message Header	WSNUPC

5.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Willesden Suburban TD:

1044 DNWA WS23

Changes in the contents of the following berths will be received by ECS from the Willesden Suburban TD:

1044 APP1 APP2 DNWA WS03 WS18 WS22 WS23
WS24 WS26 WS28

5.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by the ECS to Willesden Suburban TD:

None

Changes on the status of the following signalling items will be received by the ECS from Willesden Suburban TD (for TD map display purposes):

/Address 00

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R18AM	R22AM	SWS18	SWS22	SWS24	—	—	—

5.5 Link Status

Changes in the status of remote links will be sent to DIS1.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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6 ECS LINK TO KINGS CROSS TD

6.1 Overview

This ECS remote system link operates from port 4. It is a link to Kings Cross TD with **TD** type initialisation.

6.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	4	Time-Out Period (secs)	2
Physical Name	P4	Message Retry Count	3
Area	KXTD	Message Retry Field Flag	Set
Protocol	BR1810	Incoming Message Header	UPCKCS
Baud Rate	1200	Outgoing Message Header	KCSUPC

6.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Kings Cross TD:

/North London Incline

1113 K263 APNI 1112

/Canonbury Curve

1243 K375 APCN

Berths that do not follow this standard are listed below with the value on the left within the brackets being the IECC identity.

None

Changes in the contents of the following berths will be received by ECS from the Kings Cross TD:

/North London Incline

1113 K263 K300 K310 K320 K322 KXFA APNI

/Canonbury Curve

1243 K372 K375 K376 K377 K378 K380 K384
K386 APKC APCN

6.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by the ECS to Kings Cross TD:

None

Changes on the status of the following signalling items will be received by the ECS from Kings Cross TD (for TD map display purposes):

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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/Address 00 - 02

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S300	S310A	S310B	S320A	S320B	S322A	S322B	S372
S376	S378	S380	S384A	S384B	S384C	S386A	S386B
LP2037R*	LP2039N*	-	-	-	-	-	-

* Identity received, but not in use by the IECC.

6.5 Link Status

Changes in the status of remote links will be sent to DIS1 and DIS2.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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7 ECS LINK TO LIVERPOOL ST IECC A (1) ECS

7.1 Overview

This ECS remote system link operates from port 6. It is a link to Liverpool St IECC A (1) with **TD** type initialisation.

7.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	6	Baud Rate	9600
Physical Name	P6	Time-Out Period (secs)	2
Area	LVSB	Message Retry Count	3
Protocol	BR1810	Message Retry Field Flag	Set

7.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Liverpool St IECC A (1) ECS:

1268	L136	APGC	1233	1235	1311	1245	1243
1315	1247	1317	1251	1257	1261	APKC	

Changes in the contents of the following berths will be received by ECS from Liverpool St IECC A (1) ECS:

L268	L091	L101	L121	L125	L129	L271	L132
L135	L136	AP71	APGR				

Berths that do not follow this standard are listed below with the value on the left within the brackets being the IECC identity.

{L268 S268}

7.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by ECS to Liverpool St IECC A (1) ECS:

None

Changes on the status of the following signalling items will be transmitted by Liverpool St IECC A (1) ECS to ECS:

/Address 00

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R135AM	R1271AM	SL91	SL135	SL1271	-	-	-

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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7.5 Link Status

Changes in the status of remote links will be sent to DIS2.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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8 ECS INTER-UNIT LINK (2)

8.1 Overview

This ECS-ECS remote system link operates from port 7. It is a link to the Master/Standby computer unit with **TD** type initialisation.

8.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	7	Baud Rate	19200
Physical Name	P7	Time-Out Period (secs)	1
Area	ECS2	Message Retry Count	8
Protocol	BR1810	Message Retry Field Flag	Set

8.3 Berths

Changes in the contents of **ALL** berths known to the IECC will be transmitted by the Master ECS computer unit to the Standby ECS computer unit and vice-versa.

8.4 Signalling items

Changes on the status of the following signalling items will be transmitted by the Master ECS unit to the Standby ECS unit and vice-versa.

/ Address 00-0F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R1002	R1052	R1111AM	R1111BM	R1112AM	R1112BM	R1112BW	R1112CM
R1113	R1117	R1119	R1200	R1204	R1205AM	R1205BM	R1206AM
R1206BM	R1208AM	R1208BM	R1210AM	R1210BM	R1212	R1213AM	R1213BM
R1213CM	R1214	R1216AM	R1216BM	R1233	R1234AM	R1234BM	R1235
R1237AM	R1238	R1242	R1243	R1245	R1246	R1250	R1254AM
R1254BM	R1254CM	R1311	R1315AM	R1315BM	R1260	R1261AM	R1261BM
R1261BW	R1265	R1268	R1269	R1270	R1274	R1275AM	R1275BM
R1279	R1280	R1281	R1282	R1283	R1284	R1285AM	R1285AW
R1285BM	R1286	R1287AM	R1287AW	R1287BM	R1288	R1289AM	R1289BM
R1289CM	R1290	R1292AM	R1292BM	R1292CM	R1294AM	R1294BM	R1296
R1401AM	R1401AC	R1401BM	-	R1402	R1403AS	R1403BS	R1404
R1406AM	R1406BM	R1420AM	R1420BM	R1420CM	R1421	R1422AM	R1422BM
R1423	R1424	S1001	S1002	S1052	S1111	S1112	S1113
S1117	S1119	S1200	S1202	S1204	S1205	S1206	S1208
S1210	S1212	S1213	S1214	S1216	S1217	S1218	S1219
S1220	S1221	S1225	S1226	S1227	S1228	S1229	S1233

/ Address 10-1F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S1234	S1235	S1237	S1238	-	S1242	S1243	-

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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S1245	S1246	S1247	S1250	S1254	S1311	S1315	S1251
-	S1256	S1257	S1258	S1260	S1261	S1262	S1264
S1265	S1268	S1269	S1270	S1271	S1272	S1273	S1274
S1275	S1276	S1277	S1278	S1279	S1280	S1281	S1282
S1283	S1284	S1317	S1285	S1286	S1287	S1288	S1289
S1290	S1292	S1294	S1296	S1401	S1402	S1403	S1404
S1406	S1420	S1421	S1422	S1423	S1424	L1402TRS	L1404TRS
TAEW	-	T1234	TAFH	TAFJ	TEWA	TFCV	THAC
THAE	TAFL	TFBY	TFBX	TFBW	T172	TG3	TFAD
TFAC	TFAB	TFAA	TCEL	TWAF	TWAG	TWAH	TWKE
TWKF	TWKA	TWKB	TWKC	TWKM	TEBZ	TCDB	T1232
T1233	TEAB	TEAL	TFBP	TFBR	TFBD	TFBE	TFBG
TFBJ	S300	S310A	S310B	S320A	S320B	S322A	S322B
-	-	-	-	R706M	R800M	SWM706	SWM800
SWM902	SWM314	LP2037R*	LP2039N*	S372	S376	S378	-

* Identity received, but not in use by the IECC.

/ Address 20-2F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
-	S380	S384A	S384B	S384C	S386A	S386B	R135AM
R1271AM	SL91	SL135	SL1271	R249AM	R251AM	R270DM	R276DM
R278DM	SS237	SS239	SS241	SS249	SS251	SS270	SS274
SS276	SS278	SS290	SS292	R704BM	SS704	SS706	SS708
SS712	-	SS700	R270CM	R276CM	R278CM	-	-
-	R1000AS	R1000BS	R1008	R1010AM	R1010BM	R1011	R1013
R1016	R1019	R1301	R1302	R1304AS	R1304BS	R1306AM	R1306BM
R1036AS	R1036BM	R1037AM	R1037BM	R1037CM	R1037DC	R1037DM	R1038
R1039AS	R1039BS	R1039CS	R1039DS	R1040AM	R1040BS	R1041AM	R1041BM
R1041CM	R1041DM	R1042AS	R1042BM	R1043	R1044	R1045AS	R1045BS
R1046	R1047AM	R1047BM	R1048	S1000	S1003	S1004	S1005
S1006	S1007	S1008	S1010	S1011	S1012	S1013	S1014
S1015	S1016	S1017	S1018	S1019	S1020	S1021	S1022
S1023	S1024	S1025	S1027	S1301	S1302	S1303	S1304
S1306	S1026	S1028	S1029	S1030	S1031	S1032	S1033
S1034	S1035	S1036	S1037	S1038	S1039	S1040	S1041

/ Address 30-36

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S1042	S1043	S1044	S1045	S1046	S1047	S1048	S1050
L1045TRS	L1301TRS	-	TAET	TAF A	TAFB	TBAA	TBAC
TCBT	TCBW	-	TCBY	THAL	THAM	THAN	T1210
T1240	TADE	TADF	TADH	TADP	TADR	TADS	TADT
TADV	TADY	TAEA	THCK	THCM	THCN	THCP	TNA1
R672M	SWM334	SWM672	SWM754	SWM756	SWM758	R18AM	R22AM
SWS18	SWS22	SWS24	SUH1061	SUH1063	-	-	-

8.5 Link Status

Changes in the status of the remote links will be sent to DIS1 and DIS2.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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9 ECS LINK TO CAB SECURE RADIO

9.1 Overview

This ECS remote system link operates from port 13. It is a link to the Cab Secure Radio (CSR) with **RECALL** type initialisation.

9.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	13	Baud Rate	1200
Physical Name	PD	Time-Out Period (secs)	2
Area	CSRC	Message Retry Count	3
Protocol	BR1810	Message Retry Field Flag	Set

9.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Cab Secure Radio:

1288	1289	1292	1294	1406	1420	1421	1422
1423	1424	S703					

Changes in the contents of the following berths will be received by ECS from CSR:

None

9.4 Link Status

Changes in the status of remote links will be sent to DIS2.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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10 ECS LINK TO STRATFORD IECC B (2) ECS

10.1 Overview

This ECS remote system link operates from port 14. It is a link to Stratford IECC B (2) with **TD** type initialisation.

10.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	14	Baud Rate	9600
Physical Name	PE	Time-Out Period (secs)	2
Area	STFD	Message Retry Count	3
Protocol	BR1810	Message Retry Field Flag	Set

10.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Stratford IECC B (2) ECS:

1265	1269	1271	1273	1275	1277	1279	1281
1283	1285	1287	1289	1292	1294	1296	1420
1422	1424	S258	S269	1423	1290	1288	1421
1282	1284	1272	1274	1276	1278	1280	CCAP
CRAP	ADHM	S703	1401	F402	F404	1406	1261
1262	1264	1268	1270	1286	H704		

Berths that do not follow this standard are listed below with the value on the left within the brackets being the IECC identity.

{S258	0258}
{S269	0269}

Changes in the contents of the following berths will be received by ECS from the Stratford IECC B (2) ECS:

/Temple Mills

Z424	S703	S704	S706	S708	S712	AUHM	H704
------	------	------	------	------	------	------	------

/Carpenters Road

S237	S239	S241	S249	S251	S258	Z296	ADCR
------	------	------	------	------	------	------	------

/Channelsea Curve

S269	S270	S274	S276	S278	S290	S292
S700	Z294	AUCC	Z292			

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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Berths that do not follow this standard are listed below with the value on the left within the brackets being the IECC identity.

{Z294	S294}
{Z296	S296}
{Z424	N424}

10.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by the ECS to Stratford IECC B (2) ECS:

/Address 00-01

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R1285AMW*	R1285BM	R1289BM	R1289CM	R1420BM	R1420CM	R1421	R1423
S1285	S1289	S1420	S1421	S1423	-	-	-

* Identity R1285AMW is formed from meshing identities R1285AM and R1285AW on transmit from this IECC.

Changes on the status of the following signalling items will be received by the ECS from Stratford IECC B (2) ECS:

/Address 00-03

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R249AM	R251AM	R270CM	R270DM	R276CM	R276DM	R278CM	R278DM
SS237	SS239	SS241	SS249	SS251	SS270	SS274	SS276
SS278	SS290	SS292	-	SS700	R704BM	SS704	SS706
SS708	SS712	-	-	-	-	-	-

10.5 Link Status

Changes in the status of remote links will be sent to DIS2.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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11 ECS LINK TO ACTON WELLS MCS

11.1 Overview

This ECS remote system link operates from port 19. It is a link to Acton Wells MCS with **RECALL** type initialisation.

11.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	19	Time-Out Period (secs)	2
Physical Name	PJ	Message Retry Count	3
Area	ANWJ	Message Retry Field Flag	Set
Protocol	BR1810	Incoming Message Header	UPCANW
Baud Rate	1200	Outgoing Message Header	ANWUPC

Further details related to the link initialisation shall be as below:

- Upon receiving a CY message with an unknown berth, the ECS shall reply with a CF message containing "OPER" as the train description (i.e. the BERTH RECALL UNKNOWN BERTH field in IECC data shall be set to "REPLY").
- Upon receiving a CY message for a berth which is empty, the ECS shall reply with a CF message containing "NONE" as the train description (i.e. the BERTH RECALL EMPTY BERTH field in IECC data shall be set to "REPLY NONE").
- The ECS shall assume a non-reply to any CY message it sends if it does not receive the corresponding CF message within 2 seconds after sending the CY message (i.e. the BERTH RECALL TIMEOUT field in IECC data shall be set to the value of 4).

11.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Acton Wells MCS:

1050 A043 A047 A147

Berths that do not follow this standard are listed below with the value on the left within the brackets being the IECC identity.

{A043 1043}
{A047 1047}

Changes in the contents of the following berths will be received by ECS from Acton Wells MCS:

1050 A146 A147 A148 AP46 AP48 A101 A102
A104 SN82 SN84

All the above received berths shall be requested from Acton Wells MCS upon recovery of this link (i.e. the QUERY field in IECC data shall be set to "ALL").

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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11.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by the ECS to Acton Wells MCS:

None

Changes on the status of the following signalling items will be received by the ECS from Acton Wells MCS (for TD map display purposes):

None

11.5 Link Status

Changes in the status of remote links will be sent to DIS1.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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12 ECS LINK TO UPPER HOLLOWAY TD

12.1 Overview

This ECS remote system link operates from port 20. It is a link to Upper Holloway TD with **TD** type initialisation.

12.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	20	Time-Out Period (secs)	2
Physical Name	PK	Message Retry Count	3
Area	UHTD	Message Retry Field Flag	Set
Protocol	BR1810	Incoming Message Header	UPCUHY
Baud Rate	1200	Outgoing Message Header	UHYUPC

12.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to Upper Holloway TD:

1064 1303 1306 A010 A012 P301 1008

Berths that do not follow this standard are listed below with the value on the left within the brackets being the IECC identity.

{A010 1010}
{A012 1012}
{P301 1301}

Changes in the contents of the following berths will be received by ECS from the Upper Holloway TD:

1064 1306 APUH ST04 U061 U063

12.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by the ECS to Upper Holloway TD:

None

Changes on the status of the following signalling items will be received by the ECS from Upper Holloway TD (for TD map display purposes):

/Address 00

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
SUH1061	SUH1063	—	—	—	—	—	—

12.5 Link Status

Changes in the status of remote links will be sent to DIS1.

Version NP2	A01UPM/NLR/ECS/001	NLR IECC C (3) EXTERNAL COMMUNICATIONS SUBSYSTEM SPECIFICATION
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13 ECS LINK TO CTRL TD

13.1 Overview

This ECS remote system link operates from port 21. It is a link to the CTRL TD with **TD** type initialisation.

13.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	21	Baud Rate	19200
Physical Name	PL	Time-Out Period (secs)	2
Area	CTRL	Message Retry Count	3
Protocol	BR1810	Message Retry Field Flag	Unset

13.3 Berths

Changes in the contents of the following berths will be transmitted by ECS to the CTRL TD:

026C	041C	1117	1119	CAPP	SAPP		
1112	1205						
1204	1202	W706	W800	W314	W902		
1002	1004	1006	1008		1010	1012	1014
1016							

Changes in the contents of the following berths will be received by ECS from the CTRL TD:

026C	041C	1117	1119	CTFA	SPFA
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13.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by the ECS to CTRL TD:

None

Changes on the status of the following signalling items will be received by the ECS from CTRL TD:

None

13.5 Link Status

Changes in the status of remote links will be sent to DIS1.

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14 ECS LINK TO SMART PC LINK 1

14.1 Overview

This ECS remote system link operates from port 24. It is a link to SMART with **ETB** type initialisation.

14.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	24	Baud Rate	9600
Physical Name	PO	Time-Out Period (secs)	2
Area	SMC1	Message Retry Count	3
Protocol	BR1810	Message Retry Field Flag	Set

14.3 Berths

Changes in the contents of **ALL** berths known to the IECC will be transmitted by ECS to SMART Link 1
EXCEPT:

W706	W800	W902	W314	K300	K310	K320	K322
K372	K376	K378	K380	K384	K386	L091	L101
L121	L125	L129	L135	L271	S237	S239	S241
S249	S251	S270	S274	S276	S278	S290	S292
	S700	Z268	SSPH	SSNI	SSCR	SSCC	SSGR
SSCK	LSPH	LSNI	LSCR	LSCC	LSGR	LSCK	RDKC
DR71	RDGR	RDCC	RDCR	RKXI	RD76	RD80	APNI
DNLA	AP76	AP80	APKC	APCN	KXFA	K377	Z294
Z296	F402	F404	L132	S704	S706	S708	S712
SSHM	LSHM	AUHM	RUHM	ADHM	Z424	H704	Z292
A010	A012	A043	A047	A146	A148	AP46	AP48
AP81	APP1	APP2	APUH	A101	A102	A104	DCLA
DNHL	DNWA	F041	F301	LSAC	LSCJ	LSHJ	LSUH
LSWL	P301	RCHL	RD46	RD48	RD81	RDP1	RDP2
RDUH	SDAC	SDCJ	SDHJ	SDUH	SDWL	SN82	SN84
ST04	U061	U063	UCHL	V809	V811	V813	V815
W334	W672	W754	W756	W758	W811	WS03	WS18
WS22	WS24	WS26	WS28	SLT1	SLTA		
APD1	APD2	APD3	APU1	APU2	CAPP	CTFA	LSCT
LSSP	RCTF	RDD1	RDD2	RDD3	RDU1	RDU2	RSPF
SAPP	SPFA	SSCT	SSSP				

Berths shall be transmitted to SMART Link 1 when the link is initialised, i.e. SENDSTART field should be set to **ALL**.

Changes in the contents of the following berths will be received by ECS from SMART Link 1:

None

14.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by ECS to SMART PC Link 1:

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/ Address 00-0F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R1002	R1052	R1111AM	R1111BM	R1112AM	R1112BM	R1112BW	R1112CM
R1113	R1117	R1119	R1200	R1204	R1205AM	R1205BM	R1206AM
R1206BM	R1208AM	R1208BM	R1210AM	R1210BM	R1212	R1213AM	R1213BM
R1213CM	R1214	R1216AM	R1216BM	R1233	R1234AM	R1234BM	R1235
R1237AM	R1238	R1242	R1243	R1245	R1246	R1250	R1254AM
R1254BM	R1254CM	R1311	R1315AM	R1315BM	R1260	R1261AM	R1261BM
R1261BW	R1265	R1268	R1269	R1270	R1274	R1275AM	R1275BM
R1279	R1280	R1281	R1282	R1283	R1284	R1285AM	R1285AW
R1285BM	R1286	R1287AM	R1287AW	R1287BM	R1288	R1289AM	R1289BM
R1289CM	R1290	R1292AM	R1292BM	R1292CM	R1294AM	R1294BM	R1296
R1401AM	R1401AC	R1401BM	-	R1402	R1403AS	R1403BS	R1404
R1406AM	R1406BM	R1420AM	R1420BM	R1420CM	R1421	R1422AM	R1422BM
R1423	R1424	S1001	S1002	S1052	S1111	S1112	S1113
S1117	S1119	S1200	S1202	S1204	S1205	S1206	S1208
S1210	S1212	S1213	S1214	S1216	S1217	S1218	S1219
S1220	S1221	S1225	S1226	S1227	S1228	S1229	S1233

/ Address 10-1F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S1234	S1235	S1237	S1238	-	S1242	S1243	-
S1245	S1246	S1247	S1250	S1254	S1311	S1315	S1251
-	S1256	S1257	S1258	S1260	S1261	S1262	S1264
S1265	S1268	S1269	S1270	S1271	S1272	S1273	S1274
S1275	S1276	S1277	S1278	S1279	S1280	S1281	S1282
S1283	S1284	S1317	S1285	S1286	S1287	S1288	S1289
S1290	S1292	S1294	S1296	S1401	S1402	S1403	S1404
S1406	S1420	S1421	S1422	S1423	S1424	L1402TRS	L1404TRS
TAEW	-	T1234	TAFH	TAFJ	TEWA	TFCV	THAC
THAE	TAFL	TFBY	TFBX	TFBW	T172	TG3	TFAD
TFAC	TFAB	TFAA	TCEL	TWAF	TWAG	TWAH	TWKE
TWKF	TWKA	TWKB	TWKC	TWKM	TEBZ	TCDB	T1232
T1233	TEAB	TEAL	TFBP	TFBR	TFBD	TFBE	TFBG
TFBJ	R1000AS	R1000BS	R1008	R1010AM	R1010BM	R1011	R1013
R1016	R1019	R1301	R1302	R1304AS	R1304BS	R1306AM	R1306BM
R1036AS	R1036BM	R1037AM	R1037BM	R1037CM	R1037DC	R1037DM	R1038

/ Address 20-2C

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R1039AS	R1039BS	R1039CS	R1039DS	R1040AM	R1040BS	R1041AM	R1041BM
R1041CM	R1041DM	R1042AS	R1042BM	R1043	R1044	R1045AS	R1045BS
R1046	R1047AM	R1047BM	R1048	S1000	S1003	S1004	S1005
S1006	S1007	S1008	S1010	S1011	S1012	S1013	S1014
S1015	S1016	S1017	S1018	S1019	S1020	S1021	S1022
S1023	S1024	S1025	S1027	S1301	S1302	S1303	S1304
S1306	S1026	S1028	S1029	S1030	S1031	S1032	S1033
S1034	S1035	S1036	S1037	S1038	S1039	S1040	S1041

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S1042	S1043	S1044	S1045	S1046	S1047	S1048	S1050
L1045TRS	L1301TRS	-	TAET	TAFa	TAFB	TBAa	TBAC
TCBT	TCBW	-	TCBY	THAL	THAM	THAN	T1210
T1240	TADE	TADF	TADH	TADP	TADR	TADS	TADT
TADV	TADY	TAEA	THCK	THCM	THCN	THCP	TNA1

Changes on the status of the following signalling items will be transmitted by SMART PC Link 1 to ECS:

None

14.5 Link Status

Changes in the status of remote links will be sent to DIS1 and DIS2.

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15 ECS LINK TO SMART PC LINK 2

15.1 Overview

This ECS remote system link operates from port 30. It is a link to SMART with **ETB** type initialisation.

15.2 Link Characteristics

LINK CHARACTERISTICS			
Port(s)	30	Baud Rate	9600
Physical Name	PU	Time-Out Period (secs)	2
Area	SMC2	Message Retry Count	3
Protocol	BR1810	Message Retry Field Flag	Set

15.3 Berths

Changes in the contents of **ALL** berths known to the IECC will be transmitted by ECS to SMART Link 2 **EXCEPT**:

W706	W800	W902	W314	K300	K310	K320	K322
K372	K376	K378	K380	K384	K386	L091	L101
L121	L125	L129	L135	L271	S237	S239	S241
S249	S251	S270	S274	S276	S278	S290	S292
	S700	Z268	SSPH	SSNI	SSCR	SSCC	SSGR
SSCK	LSPH	LSNI	LSCR	LSCC	LSGR	LSCK	RDKC
DR71	RDGR	RDCC	RDCR	RKXI	RD76	RD80	APNI
DNLA	AP76	AP80	APKC	APCN	KXFA	K377	Z294
Z296	F402	F404	L132	S704	S706	S708	S712
SSHM	LSHM	AUHM	RUHM	ADHM	Z424	H704	Z292
A010	A012	A043	A047	A146	A148	AP46	AP48
AP81	APP1	APP2	APUH	A101	A102	A104	DCLA
DNHL	DNWA	F041	F301	LSAC	LSCJ	LSHJ	LSUH
LSWL	P301	RCHL	RD46	RD48	RD81	RDP1	RDP2
RDUH	SDAC	SDCJ	SDHJ	SDUH	SDWL	SN82	SN84
ST04	U061	U063	UCHL	V809	V811	V813	V815
W334	W672	W754	W756	W758	W811	WS03	WS18
WS22	WS24	WS26	WS28	SLT1	SLTA		
APD1	APD2	APD3	APU1	APU2	CAPP	CTFA	LSCT
LSSP	RCTF	RDD1	RDD2	RDD3	RDU1	RDU2	RSPF
SAPP	SPFA	SSCT	SSSP				

Berths shall be transmitted to SMART Link 2 when the link is initialised, i.e. SENDSTART field should be set to **ALL**.

Changes in the contents of the following berths will be received by ECS from SMART Link 2:

None

15.4 Signalling Items

Changes on the status of the following signalling items will be transmitted by ECS to SMART PC Link 2:

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/ Address 00-0F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R1002	R1052	R1111AM	R1111BM	R1112AM	R1112BM	R1112BW	R1112CM
R1113	R1117	R1119	R1200	R1204	R1205AM	R1205BM	R1206AM
R1206BM	R1208AM	R1208BM	R1210AM	R1210BM	R1212	R1213AM	R1213BM
R1213CM	R1214	R1216AM	R1216BM	R1233	R1234AM	R1234BM	R1235
R1237AM	R1238	R1242	R1243	R1245	R1246	R1250	R1254AM
R1254BM	R1254CM	R1311	R1315AM	R1315BM	R1260	R1261AM	R1261BM
R1261BW	R1265	R1268	R1269	R1270	R1274	R1275AM	R1275BM
R1279	R1280	R1281	R1282	R1283	R1284	R1285AM	R1285AW
R1285BM	R1286	R1287AM	R1287AW	R1287BM	R1288	R1289AM	R1289BM
R1289CM	R1290	R1292AM	R1292BM	R1292CM	R1294AM	R1294BM	R1296
R1401AM	R1401AC	R1401BM	-	R1402	R1403AS	R1403BS	R1404
R1406AM	R1406BM	R1420AM	R1420BM	R1420CM	R1421	R1422AM	R1422BM
R1423	R1424	S1001	S1002	S1052	S1111	S1112	S1113
S1117	S1119	S1200	S1202	S1204	S1205	S1206	S1208
S1210	S1212	S1213	S1214	S1216	S1217	S1218	S1219
S1220	S1221	S1225	S1226	S1227	S1228	S1229	S1233

/ Address 10-1F

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S1234	S1235	S1237	S1238	-	S1242	S1243	-
S1245	S1246	S1247	S1250	S1254	S1311	S1315	S1251
-	S1256	S1257	S1258	S1260	S1261	S1262	S1264
S1265	S1268	S1269	S1270	S1271	S1272	S1273	S1274
S1275	S1276	S1277	S1278	S1279	S1280	S1281	S1282
S1283	S1284	S1317	S1285	S1286	S1287	S1288	S1289
S1290	S1292	S1294	S1296	S1401	S1402	S1403	S1404
S1406	S1420	S1421	S1422	S1423	S1424	L1402TRS	L1404TRS
TAEW	-	T1234	TAFH	TAFJ	TEWA	TFCV	THAC
THAE	TAFL	TFBY	TFBX	TFBW	T172	TG3	TFAD
TFAC	TFAB	TFAA	TCEL	TWAF	TWAG	TWAH	TWKE
TWKF	TWKA	TWKB	TWKC	TWKM	TEBZ	TCDB	T1232
T1233	TEAB	TEAL	TFBP	TFBR	TFBD	TFBE	TFBG
TFBJ	R1000AS	R1000BS	R1008	R1010AM	R1010BM	R1011	R1013
R1016	R1019	R1301	R1302	R1304AS	R1304BS	R1306AM	R1306BM
R1036AS	R1036BM	R1037AM	R1037BM	R1037CM	R1037DC	R1037DM	R1038

/ Address 20-2C

BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
R1039AS	R1039BS	R1039CS	R1039DS	R1040AM	R1040BS	R1041AM	R1041BM
R1041CM	R1041DM	R1042AS	R1042BM	R1043	R1044	R1045AS	R1045BS
R1046	R1047AM	R1047BM	R1048	S1000	S1003	S1004	S1005
S1006	S1007	S1008	S1010	S1011	S1012	S1013	S1014
S1015	S1016	S1017	S1018	S1019	S1020	S1021	S1022
S1023	S1024	S1025	S1027	S1301	S1302	S1303	S1304
S1306	S1026	S1028	S1029	S1030	S1031	S1032	S1033
S1034	S1035	S1036	S1037	S1038	S1039	S1040	S1041

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S1042	S1043	S1044	S1045	S1046	S1047	S1048	S1050
L1045TRS	L1301TRS	-	TAET	TAFB	TAFB	TBAA	TBAC
TCBT	TCBW	-	TCBY	THAL	THAM	THAN	T1210
T1240	TADE	TADF	TADH	TADP	TADR	TADS	TADT
TADV	TADY	TAEA	THCK	THCM	THCN	THCP	TNA1

Changes on the status of the following signalling items will be transmitted by SMART PC Link 2 to ECS:

None

15.5 Link Status

Changes in the status of remote links will be sent to DIS1 and DIS2.

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